Green Market Revolution

How Market Environmentalism Can Protect Nature and Save the World

Edited by **Christopher Barnard**
Kai Weiss

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Disclaimer

21 authors from over 15 organisations have actively contributed to this book. While all authors are advocates of a market environmentalist approach, they only endorse what they wrote themselves, not necessarily all parts of the book. Similarly, the views expressed in this book do not necessarily correspond with the respective organisations that partook in it.

First Edition

About Green Market Revolution

"A timely, calm, fact-based presentation by eminent experts on the crucial issue of protecting the planet that is persuasive and a healthy antidote to the hysteria surrounding this issue."

— Steve Forbes, Chairman and CEO at Forbes Inc.

"The free market economy has shown its vast superiority over various forms of statism regarding technological change and economic progress. Economic efficiency has an important ecological component whenever it saves on the use of inputs coming from nature. I remember how ecologically destructive socialism was – the most extreme form of statism. This is a very important book, which presents the huge potential of market environmentalism. It is a much needed antidote to environmental statism, which dominates current discussions on climate policy."

— Leszek Balcerowicz, former Deputy Prime Minister of Poland (1989-1991, 1997-2001) and founder of the Civil Development Forum

"This is a timely tome. No more should we be distracted by the siren call of 'global problems, global solutions.' What this group understands is that taking responsibility - for yourself, for your community, for your business - is the key. No more mucking about blaming others. Companies, councils, cities and states - if you're the problem, you deal with it. Define the metrics, set the goal. Take responsibility. Take control. Be strong. A brighter future for all awaits."

— William Young, Director of Bloomberg New Energy Finance

"The idea has taken hold in many quarters that capitalism and free markets are the enemy of the environment. But taking an axe to the modern economy will only make billions of people poorer and less secure. A better future can only be built by harnessing the power of the market to deliver prosperity and innovation."

— Robert Colvile, Director of the Centre for Policy Studies and Editor-in-Chief of CapX

"Many of the best examples of environmental improvement came out of private-free-market initiatives. Many of the worst examples of environmental devastation came from nationalisation of land or resources. This superb book explores how to use market solutions to make the planet greener in every meaning of the term."

— Lord Matt Ridley, author of How Innovation Works and The Rational Optimist, Conservative Hereditary Peer since 2013

"For innovative solutions to environmental problems, the last places one should look are the smoke-filled rooms of politicians or the paper-stuffed file drawers of career bureaucrats. Problems are most often found and more effectively solved when we place a premium on positive incentives, cutting-edge technology and competitive entrepreneurship."

— Lawrence W. Reed, President Emeritus of the Foundation for Economic Education

"Little could be more important than the health of our planet which at the moment is a cause of such concern to so many people. All the more reason to welcome this book which makes the case for market-based solutions to be considered seriously. Market-based societies have been more successful at creating the sort of environment that we all want to live in than socialist ones."

— Linda Whetstone, Chairwoman of the Atlas Network and Network for a Free Society

"All the hot air surrounding the climate change debate has contributed its fair share to warming the earth. Who could potentially finance all the new Green New Deals of this world, all these expensive policies that are demanded but not prized in? Instead of devising solutions that will land us in another economic crisis of unforeseeable dimensions, it might be more prudent to survey the market-based solutions to the environmental problem. This book offers a more constructive way of discussing environmental issues and their solutions."

— Barbara Kolm, Vice President of the Austrian National Bank (OeNB) and Director of the Austrian Economics Center

"Whatever your personal view on the debate on climate change and environmental policy, the fact is governments around the world have set target dates to bring greenhouse gas emissions to net zero. Regardless of the merit of these targets, advocates of freer markets should examine the least interventionist way to achieve these goals. This book - as well as future work by organisations such as the IEA - provides ideas for the most free-market way to meet net zero targets."

— Syed Kamall, Academic and Research Director of the Institute of Economic Affairs, Professor of Politics and International Relations at St Mary's University

"When the Environmental Defense Fund, one of the largest environmental groups in the U.S., adopted the motto—'finding the ways that work'—it was clear that free market environmentalism had gained a foothold. That was not caused by an ideological revolution, but by a practical one. The challenge is to keep promoting practical solutions while promoting an ideological revolution that fosters liberty and environmental stewardship. Green Market Revolution builds a strong case that the two go hand-in-glove."

— Terry L. Anderson, former President, Founder, and current Senior Fellow of the Property and Environment Research Center (PERC), Senior Fellow at the Hoover Institution

"Many years have passed without a comprehensive book detailing the benefits of markets on the environment. Finally, that's changing with Green Market Revolution. Never before has an environmental work contained such reputable authors, research, and information. Green Market Revolution is a must-read for anyone who cares about the environment and markets."

— Benji Backer, President and Founder of the American Conservation Coalition

"You can be both pro market and pro the environment, yet in the current environmental debate these two concepts are often seen to be mutually exclusive. This book explains why that is not the case. The market is actually the best way in which we can protect the environment in the decades to come and this book explains exactly why."

— Daniel Dalton, former MEP for West Midlands (2015-2019), CEO of British Chamber of Commerce EU & Belgium

"It is fantastic to see free marketeers engage with and propose solutions to the great environmental challenges of our time. The Left is wrong that capitalism and environmentalism are incompatible. On the contrary, the best way to tackle threats like climate change is through harnessing the innovation and efficiency of markets."

— Sam Hall, Director of the Conservative Environment Network

"Barnard and Weiss will shock some readers with their contention that being 'Green' actually requires a healthy respect for the power of the 'Market.' After all, both 'economy' and 'ecology' deal with the prudent stewardship of scarce and precious resources. Not convinced? Read this book and learn about new strategies to grow prosperity for all as we save the planet."

— Matt Kibbe, President and Chief Community Organizer of Free the People

"Markets are crucial for improving the environment. A statement that is not often made but which is nevertheless true. This important book shows how property rights, markets, and innovation contribute every day to a better tomorrow not only for humans but also for the environment."

— Wolf von Laer, CEO of Students for Liberty

"The Green Market Revolution delivers a constructive and compelling answer to the 'Green New Deal' and an urgent antidote to all attempts to use environmental protection as a Trojan horse for the advancement of socialism. This book's positive engagement with the global climate challenge and its refusal to take refuge in climate doubt or denial is of the utmost significance for the credibility and political capital of Libertarianism."

— Patrik Schumacher, Principal of Zaha Hadid Architects

"It is in humanity's best interest to have a clean planet, with healthy resource management for our survival. But I'm afraid the more we talk about climate change and bureaucrats negotiating pollution quotas, the less we focus on the market solutions that everyday are doing something effective against pollution. This book provides a much needed alternative vision which emphasizes the market component."

— Gloria Álvarez, political scientist, radio broadcaster, and project director at the National Civic Movement of Guatemala (MCN)

The views expressed in these quotes do not necessarily reflect those of each individual's respective employers.

Contents

1. Foreword

Daniel Hannan

As I write these words, two red kites are circling outside my window. I never saw one in the wild before my thirties. Now these vast, heavy birds of prey are almost as common in this part of England as magpies. Otters, which had been on the verge of extinction, have come back to the streams nearby. The Thames, which was declared biologically dead in the 1950s, is teeming with life: you can fish salmon from its banks. Beavers, gone for hundreds of years from the British Isles, are set to make a return.

Why? For the same reason that we have more trees than at any time since the Industrial Revolution. The same reason, come to that, that you breathe cleaner air and drink cleaner water in London than in Lahore. Because the United Kingdom, like most Western countries, is a capitalist country.

Aristotle taught that that which no one owns, no one will care for. Nature has no stronger defence than the institution of private property. The earliest examples of what we now call environmentalism in England took the form of anti-pollution lawsuits brought by disgruntled neighbours. Indeed, the clean water acts were partly brought in to protect businesses from such litigation, laying down national standards instead.

Karl Marx, conversely, saw nature as a resource to be exploited, a view that found brutal expression in the smokestack economies of the Soviet bloc. The United Nations identified the Warsaw Pact states as the filthiest on the planet. Communism turned Lake Baikal into a sewer and the Aral Sea into a desert, and poured so much oil into the Volga that ferry passengers were warned not to toss their cigarettes overboard. To find that level of pollution today, you generally have to go to surviving socialist enclaves like North Korea.

> "That which no one owns, no one will care for. Nature has no stronger defence than the institution of private property."

Milder forms of state control cause environmental destruction on a commensurately smaller scale. The EU's Common Fisheries Policy, for example, has caused a collapse in North Sea stocks, in sharp contrast to the fisheries policies of, say, Iceland, New Zealand or the Falkland Islands, where private ownership of quotas is incentivised. The Common Agricultural Policy for years encouraged the felling of hedgerows and the use of pesticides in pursuit of output-based subsidies.

Just as private ownership is good for the environment, so is sovereignty. Indeed, the desire to protect our green spaces is rooted, ultimately, in love of homeland. The clue is in the name: conservatives are natural conservationists. The environment, more than anything else, embodies Edmund Burke's definition of society as a partnership between the living, the dead and the yet unborn.

So why is it so often seen to be the other way around? Why is environmentalism thought to be owned by the Left? Why are environmental solutions almost always presented as depending on more bureaucracy, higher taxes, wealth redistribution, and a loss of national sovereignty?

The answer, at least for the more hot-headed, Extinction Rebellion wing of the Green movement, is that the preservation of nature is only one part of a much wider agenda. There is an old missionary hymn in England which contains the line "Where every prospect pleases, and only man is vile." That sentiment, or something very like it, seems to inspire the most fervent of the eco-activists. They see humanity as a sort of virus that is overrunning an otherwise pristine planet. They see the birth of each new baby, not as a cause for rejoicing, but as the addition of more unwelcome human biomass.

It's not that they want the human race to disappear entirely – not, at least, in most cases. Rather, their preferred future seems to be one in which we dwindle in numbers and ambition, becoming once again a pre-modern species that eschews global trade and exchange and lives seasonally and by barter. The last thing they want is for environmental problems truly to be solved.

Suppose that some new technological breakthrough – nuclear fusion, say – were to give us a new source of clean, cheap, renewable energy. Would the greenies rejoice? Of course not. As their early guru, Paul Ehrlich, once put it, "giving society cheap abundant energy is like giving an idiot child a machine gun."

In November 2019, it was reported that engineers at the University of Waterloo had developed an artificial leaf – that is to say, a chemical process that sucks carbon dioxide out of the atmosphere and turns it into fuel. The technology is some way away from being commercially viable. But does anyone seriously imagine that, if it becomes affordable – if we achieve the Green dream of removing CO2 from the air while at the same time making cheap energy – there will be general rejoicing? Of course not. The eco-warriors would see the new invention as likely to boost the market system that had created it. And they would be right.

> "Here is a truly holistic, truly comprehensive and truly international book exploring market solutions to environmental challenges. It fills the most important gap of all."

Inventions like that artificial leaf depend on the innovation and wealth that come from free markets. Modern capitalism is the best friend of a fragile habitat. Suppose, for example, that the price of lab-produced meat continues to fall as it has been falling these past five years. (I say "lab-produced", but the meat, grown in nutrients rather than on living creatures, will soon be made in factories.) Suddenly, vast tracts of the Earth would be released from the pressure of sustaining pasture land or growing feed crops. Nature would pour back in, and the net reforestation that we have witnessed in wealthy countries since the 1980s would become a massive and accelerating global phenomenon.

It is hard to imagine that even that happy outcome would jolt the greenies out of their gloom. They would simply find some new threat to worry about. Pessimism is in their nature, just as ambition is in ours. That, ultimately, is why our side will win.

This book fizzes with such ambition. Here is a truly holistic, truly comprehensive and truly international collection of essays exploring market-based solutions to environmental challenges. In a crowded field of eco-literature, it fills the most important gap of all. Let the Lefties panic. Let them grumble. We have work to do.

Daniel Hannan
is a writer and journalist. He is author of eleven books, and a columnist with several British and American newspapers. He was a Conservative MEP for more than 20 years and is President of the Initiative for Free Trade.

2. Introduction: A Fresh Approach to the Debate

Kai Weiss

Protecting the environment and tackling the challenges of climate change is one of the most important tasks of our lifetime. The best solutions might come from unheralded places.

Driving south down John D. Rockefeller Memorial Parkway in Wyoming can easily become a disillusioning experience. Just having passed Yellowstone Lake and slowly but surely leaving the oldest national park in the world, one drives through forests and vast plains - and past swathes of dead trees. About 25 miles in, however, one is suddenly faced with a huge mountain range seemingly emerging out of the road in front.

The Teton Range of Wyoming towers above Jackson Hole and the surrounding area. The mesmerising, sharp peaks are hard to look away from: Mount Owen at 12,900 feet (3,900 metres), Mount Moran at 12,600 ft (3,840m), Buck Mountain at 11,900 ft (3,620m) - and in the middle, the tallest of them all, the Grand Teton, at 13,700 ft (4,180m). The majesty of the Tetons can only be described as awe-inspiring. And further exploring the pristine canyons, alpine lakes, seeing the moose, grizzlies, deer, and marmots will only confirm this initial feeling.

> "The natural wonders of our world need to be preserved, for us and future generations."

As former U.S. President Theodore Roosevelt, the forefather of the iconic American National Parks, once said, "the Teton Mountains are, to my way of thinking, quite the grandest and most spectacular mountains I have ever seen … they present a picture of ever-changing beauty which is to me beyond compare."[1] Beholding the Tetons—as well as the grandeur of other mountain ranges, lakes, oceans, and natural landscapes—inevitably prompts one to conclude: these are worth protecting, for us and posterity.

The idea of environmental stewardship, i.e., the "structuring [of] our human relationship with land and the animals and plants which grow upon it,"[2] is thousands of years old. Let humans "have dominion over the fish of the sea, and over the fowl of the air, and over the cattle, and over all the earth, and over every creeping thing that creepeth upon the earth," (Gen 1:26) the Israelite God commanded in the very first chapter of the Book of Genesis. Humanity's dominion over the world entailed taking care of it appropriately. Breaking this rule would cause His anger: "I brought you into a plentiful country, to eat the fruit thereof and the goodness thereof; but when ye entered, ye defiled my land, and made mine heritage an abomination" (Jer 2:7).

Yet, our modern environmentalist idea that nature is something intrinsically good and worth protecting only picked up steam as Western countries grew richer in the 19th and early 20th centuries. Yellowstone National Park was established in 1872, the first of its kind. Outdoor enthusiast Teddy Roosevelt, who also called nature's wonders "the most glorious heritage," was U.S. President from 1901 to 1909. Henry David Thoreau vanished into the wilderness of Walden in 1854. And Ralph Waldo Emerson penned his *Nature* essay in 1836, probably the most genuine love letter written to the natural world to this day:

"Nature never wears a mean appearance. Neither does the wisest man extort her secret, and lose his curiosity by finding out all her perfection. Nature never became a toy to a wise spirit. The flowers, the animals, the mountains, reflected the wisdom of the best hour … In the presence of nature a wild delight runs through the man."[3]

1 National Park Service (2012). The Most Spectacular Mountains - Countdown: 24 Days, https://www.nps.gov/grte/blogs/the-most-spectacular-mountains-countdown-24-days.htm
2 Leopold, Aldo (2006). The Essential Aldo Leopold: Quotations and Commentaries. Edited by Richard L. Knight & Curt D. Meine. University of Wisconsin Press, p. 298.
3 Emerson, Ralph Waldo ([1836] 2014). Nature. In Cramer, Jeffrey S. (ed.). The Portable Emerson. Penguin Classics, p. 19.

Indeed, "a nobler want of man is served by nature, namely, the love of beauty."[4] Today's world seems to concur with Emerson. All kinds of outdoor activities are rapidly gaining in popularity: hiking, biking, climbing, fishing, camping, rafting, skiing, snowboarding, or simply road-tripping. The annual visits to National Parks in the United States have risen by 25% since 1990.[5] Some National Parks, such as Zion in Utah, have seen numbers increase by 60% in the last decade.[6] Membership of the *Österreichischer Alpenverein*, the Austrian Alpine Club, has increased by more than 50% from 2006 to 2016,[7] and its sister organisation in Germany has experienced similar exponential growth.[8] Particularly talented hikers and climbers have even risen to fame, like the climber Alex Honnold, protagonist of Academy-Award winning documentary *Free Solo*.

> "Too often, environmentalism has deteriorated into apocalyptic warnings that don't offer any actual solutions."

Being outside in nature has thus become a popular aspect of modern life. Yet, this has not only given rise to increasing demands for the preservation of earth's beauty, but also to new environmental challenges due to overcrowding and mass tourism. One of the most notable stories in recent years is of a picture from the peak of Mount Everest, the world's tallest mountain, completely overcrowded and jammed with climbers back-to-back.[9]

Beyond mere conservation issues, there is of course a second major challenge—one that has unleashed an unprecedented wave of environmental activism, especially amongst students: the dangers of global warming, i.e. an increase in global temperatures due to CO2 emissions. While assertions that the world will come to an end within the next decade or two are overblown,[10] we will be faced with potentially severe challenges in the future regarding our climate—and, thus, our way of life itself. Significant economic consequences may follow too, but the most dramatic repercussions can be expected for the very physical health of our planet, with coral reefs extinguished, extreme and erratic weather conditions threatening

4 ibid., p. 22
5 National Park Service (2019). Visitation Numbers. https://www.nps.gov/aboutus/visitation-numbers.htm
6 Jones, Jay (2019). How did Zion National Park become more popular than Yosemite or Yellowstone?, https://www.latimes.com/travel/story/2019-09-27/how-did-zion-become-one-of-americas-most-popular-national-parks
7 Alpenverein Österreich (2017). Begeisterung für den Alpenverein hält an. https://www.alpenverein.at/portal/news/aktuelle_news/2017/2017_02_09_mitgliederstatistik-2016-begeisterung-fuer-den-alpenverein-haelt-an.php
8 Statista (2019). Mitgliederzahl des Deutschen Alpenvereins von 2002 bis 2019. https://de.statista.com/statistik/daten/studie/215943/umfrage/mitgliederzahl-des-deutschen-alpenvereins/
9 Narula, Svati Kirsten (2019). Yes, This Photo from Everest Is Real. https://www.outsideonline.com/2397164/everest-summit-traffic-jam
10 Bailey, Ronald (2019). Rep. Alexandria Ocasio-Cortez Is Wrong: There Is No Looming Climate Change 'Expiration Date'. https://reason.com/2019/04/05/rep-alexandria-ocasio-cortez-is-wrong-th/

human safety, glaciers and sea ice melting, sea levels rising, and temperatures rising[11] — perhaps not as disastrous in the Northern hemisphere, but potentially catastrophic in other areas of the world. Entire swaths of land could vanish, including in Europe,[12] and some of nature's most wondrous landscapes might be in danger too.[13] Indeed, the Intergovernmental Panel on Climate Change (IPCC) concludes that "impacts on natural and human systems from global warming have already been observed. Many land and ocean ecosystems and some of the services they provide have already changed due to global warming."[14] While it is not within the purview of this book to explore the scientific case that climate change is real in full depth, it suffices to say that the preservation of nature and the mitigation of global warming need to be high on the agenda—if not at the top.

> "The principles of private property, the market economy, free trade, and the rule of law are better tools to address our environmental problems."

The solutions currently being proposed, however, are far from optimal. Too often, environmentalism has deteriorated into apocalyptic warnings that are based on emotion rather than on the prevailing scientific consensus. A lack of trust in humanity's ingenuity has led to a consensus that these environmental emergencies can only be solved through top-down government mandates and powerful central authorities. It has created a sense that the rule of law and democratic decision-making are mere nuisances on the path to saving the world through far-reaching "system change."[15] Significant economic chaos and mass unemployment are costs worth bearing. And for some, even giving up what makes us human, such as bearing and raising children, is a price worth paying if the earth survives in return.[16]

This book's intention is to provide an alternative to these views. All of us agree that the preservation of nature is crucial. We all agree that global warming could lead to severe crises in the future which we need to address today. We find it laudable—and promising—that so many citizens care about these issues, particularly those young people who are out on the streets to fight for their future.

11 ibid.
12 O'Leary, Naomi (2019). When will the Netherlands disappear?. https://www.politico.eu/article/when-will-the-netherlands-disappear-climate-change/
13 LaPlante-Dube, Madeleine (2019). The Himalayas Are in Even Worse Shape Than We Thought. https://www.outsideonline.com/2398498/himalayas-climate-research-glaciers-melting
14 IPCC (2018). Summary for Policymakers. https://www.ipcc.ch/sr15/chapter/spm/
15 Cannon, Sheila M. (2019). Climate strikes: Greta Thunberg calls for 'system change not climate change' - here's what that could look like. http://theconversation.com/climate-strikes-greta-thunberg-calls-for-system-change-not-climate-change-heres-what-that-could-look-like-112891
16 Follett, Chelsea (2019). How Anti-Humanism Has Conquered the Left. https://quillette.com/2019/05/01/how-anti-humanism-conquered-the-left/

At the same time, however, it is our conviction that panic, as well as the destruction of our economies and our liberties, is not the solution. Rather, principles such as private property, the market economy, free trade, and the rule of law are better tools to address our environmental problems. Nature is best preserved through the incentives of private ownership, the internalisation of negative environmental impacts, and the priority of local approaches over power-hoarding centralisation at the political level. Global warming can be fought by empowering the creative and (positive) disruptive features of entrepreneurship, free enterprise, and trade. And humanity, being a part of nature rather than a violent intruder,[17] can solve these problems through cooperation, innovation, and progress—as well as a healthy dose of optimism.

> "Wanting to preserve the environment and save our world is one thing. But knowing how to do this whilst not destroying our civilisation in the process is equally important."

This vision, which we call *market environmentalism*, is anything but an oxymoron. [18] Showing how we can empower entrepreneurs, innovators, philanthropists, communities, and even individuals themselves to help solve these issues is what we have set out to do over the next 160 pages. This is done on both a universally applicable and on a country-specific basis, with respective chapters on the United States, the United Kingdom, Austria, and the European Union in general.

Because the inconvenient truth[19] is that while wanting to preserve the environment and to save our world is one thing, knowing how to do this without destroying our civilisation and livelihood in the process is at least equally important. This book puts forward a vision that encompasses both aspects of the debate and its many trade-offs, showing that we need not sacrifice our economy and way of life in order to save the planet. In fact, they can be mutually inclusive.

17 Regan, Shawn (2016). Environmentalism Without Romance. https://www.perc.org/wp-content/uploads/2016/10/EnvironmentalismWithoutRomance_SRegan.pdf

18 Anderson, Terry L. & Candice Jackson Mayhugh (1997). Terry Anderson Explains Free Market Environmentalism. https://www.perc.org/1997/10/01/terry-anderson-explains-free-market-environmentalism/

19 Gore, Al & Davis Guggenheim (2006). An Inconvenient Truth. Paramount Classics.

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YOU DECIDE

3. The Current Consensus

Nick Lindquist

Environmentalism is the hot-button issue of the day. But what are the actual demands from environmental activists? In what way do they differ?

Though the environment has long been an issue on the political agenda, it's hard to recall a time when the issue was as discussed and hotly debated as it is now. It has become such an important issue in the U.S. that politicians like Al Gore and Michael Bloomberg are regaining relevance and new faces like Alexandria Ocasio-Cortez and Tom Steyer are emerging. Even Republicans like Elise Stefanik, Lee Zeldin, Lindsey Graham, and Cory Gardner have emerged as environmental conservatives. This isn't only important in the United States, either. The voices of environmentalists are being projected across the globe. Billions of dollars, millions of activists, and countless hours of debate get poured into the issue every year.

Despite the heightened discussion and push to do more on the environment, it is very challenging for the average global citizen to see through the smoke and make sense of the chatter on what needs to be done to foster a cleaner global environment. The 2018 Global Climate Action Summit (GCAS) in San Francisco, California, accurately illustrates the source of this confusion. This is a yearly summit that serves as an international discussion between global leadership on climate change. Al Gore, John Kerry, Marc Benioff, Harrison Ford, Andrea Mitchell, as well as business leaders, governors, mayors, foreign diplomats, award-winning investigative journalists, and more are just a taste of the speakers and delegates in attendance.

"Many environmental activists encourage immediate action, even if at the cost of the economy or societal norms."

I recall arriving at the conference centre on the first day to find oil and gas protestors with "keep it in the ground" signs blocking the entrance, forcing everyone to the press entrance and delaying the conference by hours. I remember other protestors bursting into the convention centre to sabotage Michael Bloomberg's speech. If GCAS was in fact created to encourage environmental action, why would there be climate protestors? Because there is little consensus on what to do about climate change and other environmental challenges.

The protestors at this event differed fundamentally from the delegates in attendance. The protestors and the delegates both differed from the conservative environmentalists that were already barely in attendance due to efforts to keep them out by the conference planners and them then starting their own conference. The far-left climate protestors, the progressive climate policy advocates, and the right-of-centre environmentalists all attending two separate conferences that week in San Francisco illustrates the different factions of the global environmental movement and how diverse it is. To fully understand the demands and beliefs of the global environmental community, it is important that we separate the major types and examine each one.

The Far Left Environmental Activists

The far-left faction of the environmental movement is perhaps the loudest. They are able to take hold of media coverage unlike any other and they are highly skilled at social media projection, making topics, tags, and people trend in order to connect with their global audience. The goal of this faction, broadly, is to draw attention to the issue through protests, climate strikes, and other non-violent yet inconvenient demonstrations as well as to encourage immediate action, even if at the cost of the economy or societal norms.

Greta Thunberg has been the most prominent voice from this side of the movement in 2019. Greta, a 16-year-old from Sweden, climbed her way to the status of international climate activist starting with a small climate protest outside the Swedish parliament in 2018.[1] This protest quickly ignited all over social media, launching her into the spotlight and ultimately making her an internationally known climate figure. The first major wave she made was a

1 BBC News (2019). Who Is Greta Thunberg, the #FridaysForFuture Activist? https://www.bbc.com/news/world-europe-49918719

worldwide school strike in the name of climate. The strikes were documented using the hashtag *#FridaysForFuture*.[2] Since the initial strike of 20,000, the numbers quickly grew to millions as Greta continued to stage protests across the world.[3] She continues striking for climate action every Friday to this day.

Her broad demand is clear: governments need to act on climate and they need to do it now. Though she has pushed the government to act and even demanded specific targets to reach for, she hasn't been very specific on what exactly governments are to do to achieve the reductions. She has stated before at one of her early strikes that she wanted the Swedish Government to reduce CO2 emissions by 15% per year.[4] Last year, Greta testified in a hearing before the United States House Select Committee on the Climate Crisis. Her testimony famously consisted of urging the Committee Members to "Listen to the Scientists" and read the 2018 IPCC Special Report on Global Warming.[5] The report outlines the threat posed to the world by not acting on climate. Aside from this, specific proposals to governments are missing.

> "Environmental programs from the left are most often based on big government, top-down, and mandate-intensive principles."

For regular people, however, she has made recommendations both through her words and her actions. She strongly opposes air travel. She opposes it so much that she refuses to fly anymore, instead opting to take a train and has even taken a sailboat to New York City.[6] Greta has urged others to do the same, in addition to reducing consumption of meat, voting based on climate, and becoming a climate activist.

A group that treads the same line as Greta is Extinction Rebellion. According to their website, Extinction Rebellion is an organized movement that believes they can halt "mass extinction" and "social collapse" through non-violent civil disobedience. The group showed up in the media in October of 2018 after they staged a climate protest outside the Palace of Westminster that grew to around 1,500 people, up from original expectations of a couple hundred. In the weeks following the initial protest, they grew to around 6,000 activists and blocked 5 major bridges into London, once again making waves in the media.[7] The group believes that economic disruption and public awareness is the key to changing the way the world works and reducing CO2 emissions.

2 ibid.
3 Woodward, Aylin (2019). How 16-Year-Old Greta Thunberg - Time's 2019 Person of the Year - Became the Face of Climate Activism in Just One Year. https://www.businessinsider.com/greta-thunberg-bio-climate-change-activist-2019-9#thunberg-was-nominated-for-the-nobel-peace-prize-in-march-7
4 ibid.
5 Epstein, Kayla (2019). Teen Climate Activist Greta Thunberg Demands That Congress 'Listen to the Scientists'. https://www.washingtonpost.com/climate-environment/2019/09/18/teen-climate-activist-greta-thunberg-demands-that-congress-listen-scientists/
6 Law, Tara (2019). Greta Thunberg Arrives in New York After Sailing Across Atlantic. https://time.com/5663534/greta-thunberg-arrives-sail-atlantic/
7 Extinction Rebellion (2020). About Us. https://rebellion.earth/the-truth/about-us/

The group also has their demands listed directly on their website. They want the UK Government to tell the truth about climate change and admit it is happening, reduce emissions to net-zero by 2025, and form a Citizen's Assembly on climate and ecological justice.[8] They claim to be working with several MPs to get their demands drafted and introduced as a bill in the British Parliament, making each demand a section of the bill.

Similar to Greta, the group outlines what they want and that action is urgent - however, they fail to explain what policy mechanisms will be needed to get there. In other words, they know that something needs to be done but they don't seem to fully know how to achieve the goals they wish to see achieved. This is, in essence, what left-leaning climate activism is comprised of. Greta, Extinction Rebellion, and other climate activists on the far left are highly skilled at bringing climate change into the conversation and urging lawmakers and individuals to take significant steps to curb both public and private emissions. They are experts at trending on social media, getting young people involved in climate activism, and making waves across the internet and TV media. However, when it comes to the actual steps we need to take to reduce emissions, they either advocate for ideas like ceasing air travel which would significantly disrupt everyday life and threaten global economic stability, or they don't touch on policy at all.

> "Up until recently, pro-market and conservative voices have been largely silent in environmental discussions."

Another interesting point to look at when discussing far left environmentalists is that much of what they want isn't about climate change at all. Instead, they propose 'climate justice,' which is essentially using inequality and racial issues as a reason for climate action. In other words, they wish to use climate change as a reason for large social programs, wealth redistribution, socialising entire industries, and more. On the Global Climate Strike website, for example, one of their demands is that we "stop burning fossil fuels and ensure a rapid energy revolution with equity, reparations, and climate justice at its heart." In short, the goal of much of this action isn't to tackle climate change but rather enact other progressive policies using climate change as a Trojan horse.[9]

Mainstream Progressive Environmentalists

Those closer to the centre of the political spectrum in the environmental discussion tend to be lawmakers, policy advocates, and regular people. Alexandria Ocasio-Cortez, Al Gore, Michael Bloomberg, and Elizabeth Warren would all fall into this category. Though diverse politically, they share fundamental similarities. The biggest similarity is, obviously, that the environment is not being cared for properly and that the government has an obligation to step in and fix it. These issues span from climate change to deforestation, water quality, ocean pollution, and beyond. Though often missing the mark, they tend to have in-depth proposals on how to tackle climate change from a policy perspective.

8 Extinction Rebellion (2020). Our Demands. https://rebellion.earth/the-truth/demands/
9 Colvile, Robert (2019). The Problem with the Climate Strike's Leaders. www.nationalreview.com/2019/09/climate-strike-leaders-anti-science/

Perhaps the most prominent proposal coming from this faction is the Green New Deal. The Green New Deal was a United States House Resolution (H. Res. 109) that proposed an overhaul of the energy grid, American infrastructure, economic structures surrounding energy and energy efficiency, expansion of energy efficient buildings both public and privately owned, and an expansion of social programmes and government assistance mechanisms such as increased public housing.[10] The plan quickly became the number one topic of discussion amongst everyone from politicians to media pundits on both sides, online publications, radio hosts, and millions of regular people across the world.

The Green New Deal was accepted by those in the left-of-centre environmental movement as a refreshing change of pace to solving climate change. Much of the protestor faction also praised the proposal as a start. With the nature of the resolution's proposed approach being big government, top-down, and mandate-intensive, it is no surprise that progressive climate leaders embraced this plan.

This group's policy demands are clearer. They believe in strict regulations on industry, ambitious renewable energy mandates, heavy renewable energy subsidies, strong protections of public land from energy development, opposition to hydro fracking and offshore drilling, and using tax hikes to pay for environmental and infrastructure improvements.

The proposals coming from this faction are more mainstream than, say, banning air travel but are still rooted in feelings and a 'something is better than nothing' mentality. They, along with the progressive protestors, agree that something must be done to combat environmental challenges - and that government is the answer.

Moderate Environmentalists

Moderate environmentalists consist of lawmakers and advocates from both sides of the aisle. Considered an 'establishment group,' moderate environmentalists have helped guide the environmental discussion for a while along with the Mainstream Progressives. Unlike the other groups, this one consists mostly of people from both sides of the aisle. The group is comprised more of lawmakers and D.C. policy advocates than student activists. Examples of some moderate solutions might include subsidies, tax credits, and infrastructure spending.

This is a unique group in that they believe something needs to be done, but the answer is a combination of government intervention and market action. They believe in subsidies, for example, as a way for the government to intervene in the economy without completely taking it over. Somewhat similar to Mainstream Progressives, Moderate Environmentalists aren't afraid to spend tax dollars to stimulate the clean economy and they aren't opposed to mounting on more regulations to the economy. The difference between the two is to the extent at which government intervention and spending is necessary. Also unlike the Mainstream Progressives, Moderate Environmentalists identify the need for nuclear power in order to significantly reduce emissions, similar to the group we will examine in the next subsection.

10 Ocasio-Cortez, Alexandria (2019). Text - H.Res.109 - 116th Congress (2019-2020): Recognizing the Duty of the Federal Government to Create a Green New Deal. https://www.congress.gov/bill/116th-congress/house-resolution/109/text.

Pro-Market Environmental Advocates

Up until recently, pro-market and conservative voices have been largely silent in environmental discussions. For too long, whenever centre-right political forces engaged in these debates, they tended to simply adopt the platforms of moderate environmentalists or progressives - and in some cases, they still do to this day, as can be seen by the likes of the President of the European Commission Ursula von der Leyen (see chapter 14) and the Bavarian Prime Minister Markus Söder,[11] who are both members of officially conservative political parties, but have adopted a highly interventionist environmental playbook.

This has changed in recent years with the founding of new groups such as the American Conservation Coalition (ACC) and the British Conservation Alliance (BCA) and the continued work of organisations such as the Property and Environment Research Center (PERC), which have put forward a true pro-market alternative. The creation of this book is a culmination of the re-engagement and increased attention attributed to the environmental debate by such new pro-market voices. Future chapters address the emerging consensus on this side of the debate around the concept of market environmentalism, whilst chapter 16 explicitly traces the history of the way young people, especially at ACC and BCA, are in fact shaping these discussions.

So, What is the Environmental Consensus?

Despite how drastically different each group in the global movement is, the general agreement is that something needs to be done to combat environmental challenges - especially climate change.

The differences come into play when discussing policy. Far left environmental activists believe something needs to be done to curb environmental impact immediately and at any cost. They don't have exact answers on what exactly to do, as long as something is done - presumably by governments and preferably on the global level. The mainstream progressive environmentalists also believe swift action needs to be taken and they, too, believe government must spearhead this effort. They have proposed massive government spending packages. But can governments actually perform what these forces expect from it? Answering this question is what we will now turn to.

11 Gehrke, Laurenz (2019). In Bavaria, Black is the new Green. https://www.politico.eu/article/bavaria-csu-goes-green-markus-soder-climate-conversion/

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4. Why Government Fails the Environment

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Most environmental demands call for extensive government action. Historically, governments have often failed in protecting the environment, as demonstrated by the examples in this chapter. Political environmentalism should be constrained as much as possible.

Our environment is what sustains us. We rely on a clean and healthy environment to feed us, clothe us, and provide us with recreation opportunities. So it makes sense that humans value conservation and seek out solutions to environmental problems such as pollution or resource depletion.

What doesn't make sense is why we so often turn to the government to solve these environmental problems. From the Endangered Species Act to the Clean Water Act to the Paris Agreement, environmental 'solutions' have become synonymous with government policy and regulation. But more government does not necessarily mean a healthier environment. Why not? Because incentives matter.

As humans who rely on natural resources for a wide variety of wants and needs, we place competing demands on scarce resources. Take, for example, a river. River water could be diverted as a water source for a downstream city, used for recreational boating and fishing, left instream to provide wildlife habitat, damned to generate renewable hydropower, or used to remove and dissolve a stream of waste. The same water, however, cannot be all things to all people. How the resource is used is an allocation question—a decision that should consider the trade-offs and values of alternate uses. Who gets to choose will impact how those trade-offs are made.

Government actors make very different choices than people in the private sector because their incentives are different. Government decision-makers don't bear the full cost of their decisions, nor do they reap the full benefit. If the roof of your home is leaking it behooves you to repair it quickly. As the owner, you pay the full cost of damages and the long-term repercussions of letting the damage get worse. You also benefit from a quick repair both in peace of mind and increased structure value. Decisions made by government actors do not weigh the competing resource uses or properly understand the trade-offs. In comparison, environmental solutions based in property rights and markets get the incentives right because owners bear the full costs and benefits of resource management decisions, which includes alternative resource uses.

This chapter will explain why the incentives for government solutions to environmental problems lead to misallocation of resources in situations of both central planning and political environmentalism. By identifying and understanding the problems that come with government overreach we can better understand, too, why market environmentalism is a superior approach in solving environmental problems to enhance conservation.

Environmental Failure Through Central Planning

As the previous chapter has shown, capitalism is a popular punching bag as the cause of environmental deterioration. Headlines like "Ending climate change requires the end of capitalism. Have we got the stomach for it?"[1] and "The Climate Crisis? It's Capitalism, Stupid"[2] reveal an increasingly prominent sentiment that we must abandon a free society in order to save our planet. In the United States, this push has led to a proposed Green New Deal, a framework that would renounce capitalism and push progressive economic proposals as "necessary" to solve climate change.[3] In the European Union, a similar Green Deal is at the top of the agenda (see chapter 14).

1 McDuff, Phil (2019). Ending Climate Change Requires the End of Capitalism. Have We Got the Stomach For It? https://www.theguardian.com/commentisfree/2019/mar/18/ending-climate-change-end-capitalism

2 Fong, Benjamin Y. (2017). The Climate Crisis? It's Capitalism, Stupid. https://www.nytimes.com/2017/11/20/opinion/climate-capitalism-crisis.html

3 Ocasio-Cortez, Alexandria (2019). H.Res.109 - Recognizing the duty of the Federal Government

We should be wary, however, of what happens to the environment when we look to central planning. Socialist and communist regimes have left enormous scars on our natural world. We have much to learn from these historic examples about how extreme government control over all aspects of life gets the incentives for conservation wrong.[4]

One reason is that central planners have little information about resource value and grossly misallocate resources as a result. Many socialist economies such as those in Eastern Europe and the former Soviet Union subsidised energy prices in efforts to boost production. As a result, their industrial production was five to ten times more energy-intensive than it was in market systems. The low prices gave producers no reason to be efficient with their energy use. This, in turn, led to more pollution. A World Bank study in 1992 found that more than half of the air pollution in the region could be attributed to this subsidised energy pricing.[5] As this example demonstrates, because central planners do not directly bear the full costs of resource use, they do not have good information about the actual resource value, competing uses, or conservation. Market prices, on the other hand, signal the value of alternative resource uses, directing them toward the highest-valued use (see chapter 5).

> "The industrial production of Soviet economies was five to ten times more energy-intensive than in market systems."

It naturally follows that central planning causes inefficient use of natural resources. Price motivates behaviour. When a resource is underpriced there is less reason to innovate and increase efficiency. Mikhail Bernstam found that market economies used about one-third as much energy and steel per unit of GDP as did socialist countries.[6] Likewise, economist Thomasz Zylicz found that the non-market economies of Central and Eastern Europe required two to three times more inputs to produce a given output compared to Western Europe.[7]

This inefficiency does not bode well for the environment. The communist economies of the former Soviet Union and China emitted several times more carbon per unit of GDP than the market economy of the United States did—a trend that largely continues today.[8] Markets that allow accurate pricing of resources promote innovation and allow us to do more with less. Markets encourage resource conservation rather than unnecessarily wasting them in production.

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to create a Green New Deal.

4 See Regan, Shawn (2019). Socialism Is Bad for the Environment. https://www.nationalreview.com/magazine/2019/06/03/socialism-is-bad-for-the-environment/

5 The World Bank (1992). World Development Report 1992: Development and the Environment, p. 12.

6 Bernstam, Mikhail S. (1990). "The Wealth of Nations and the Environment." In Population and Development Review 16, pp. 333-373.

7 Zylicz, Tomasz (1994). "Environmental Policies in Central and Eastern Europe." In Jannson, Ann Mari et al. Investing in Natural Capital: The Ecological Economics Approach To Sustainability. International Society for Ecological Economics. Island Press.

8 Human Progress. CO2 Emissions, kilograms, per 2010 U.S. dollar of GDP, 1960-2014. https://humanprogress.org/

Additionally, it is difficult to hold individuals or governments accountable for environmental damage without property rights. In centrally planned societies, property and resources are state-owned, so if the state chooses to clearcut a forest, build housing, or operate a factory that pollutes a river, there is no mechanism to hold the government accountable for damages inflicted.

> "The government-knows-best mentality assumes that centralised policy-makers have both the knowledge and incentive to accurately account for all of the costs and benefits of resource stewardship."

In Cuba, for example, socialist efforts to maximise production have caused extensive air, soil, and water pollution.[9] In Venezuela, socialist policies have contaminated drinking water and caused frequent oil spills due to neglect and mismanagement by the state-owned energy company. After all, when government is benefitting from the resource use and providing some immediate visual benefits to society, there is little reason to hold itself accountable to higher environmental standards.

Central planning is an extreme version of government overreach. Yet even though history reveals how government-run economies exploit resources and cause undue environmental damage, it continues in modern times in the name of advancing the national economy.

Environmental Failure Through Political Environmentalism

Many countries pride themselves for having free market (or at least market-based) economies. Yet they often hide behind government to solve environmental problems. The ideas undergirding political environmentalism are falsely grounded in the belief that only regulation or government ownership or management of resources can lead to good conservation outcomes.[10] It is often well-intentioned in the name of protecting the environment both now and in the future, but political environmentalism gets the incentives wrong when it abandons property rights and trade in favor of winner-takes-all resource allocations.

Open-access resources that have no owner provide a case in point. Such resources are available on a first-come, first-served basis. As a result, people will overuse the resources. Ocean fisheries are one such example. A fisherman can go out and catch as many fish as possible knowing that fish left uncaught are likely to be caught by another fisherman. Maximising catch by all fishermen leaves too few fish in the ocean to reproduce and sustain future fish populations. Collapsing global fish stocks have caused great concern, and many conservationists have turned to the government and regulation to solve the problem. Various regulations have restricted access to

dwline?p=576&c0=2&c1=41&c2=6&yf=1960&yl=2014&high=0&reg=3&reg1=0

9 Díaz-Briquets, Sergio & Jorge Pérez-López (2000). Conquering Nature: The Environmental Legacy of Socialism in Cuba. University of Pittsburgh Press.

10 See Anderson, Terry L. & Donald R. Leal (2015). Free Market Environmentalism for the Next Generation. Palgrave Macmillan.

the common fish resource. Fishing seasons were shortened, but fishermen bought bigger boats, improved their fishing technology, and took to the seas even in risky weather to protect their livelihoods. Even with regulation, the result was a wasteful "race to fish" that was bad for both fish and fishermen, who expended great costs to catch as many fish as possible before season closures set in. The regulations may have been well-intentioned for conservation, but the results failed because they created incentives to fish harder and riskier rather than leave enough fish to repopulate for next year.[11]

Regulation also creates an incentive for interest groups to lobby for an exemption or receive special treatment. Because regulation is a political process, groups with political power can manipulate their way into a favourable outcome, ultimately reducing the effectiveness of regulation. In the 1970s, as part of amendments to the Clean Air Act, many politically powerful utilities were able to lobby U.S. Congress to be exempt from the stringent restrictions to reduce emissions. The result was that older, dirtier utilities continued to operate. Furthermore, the high cost of building new, cleaner utilities that met the new standards postponed their production, meaning dirtier air for longer.

Another approach to conservation through political environmentalism is giving government ownership or management over resources with the expectation that the government will manage the resources for the public benefit. This government-knows-best mentality assumes that centralised policymakers have both the knowledge and incentive to accurately account for all of the costs and benefits of resource stewardship and improve efficiency to do the most amount of good for the public.

Government officials do not bear the full costs when making management decisions. Even when acting with the best of intentions, they are often missing information, and public officials are often forced to kowtow to their federal or national government for appropriations rather than tend to the resources at hand. In short, the incentives are perverse.

In the United States, the shortcomings of government management play out in public lands and national parks. National parks are natural areas set aside by the government for conservation and public enjoyment. They are beautiful and important landscapes, but they are also fraught with controversy and funding problems. Park management is highly political. There are competing demands on the landscapes—should they be left untouched for wildlife, or should we build lodges and infrastructure for recreational visitors? And there are competing political ideas about how to best use funding—should funding be used to build high-profile, headline-worthy visitor centres, or should it go toward routine maintenance needs, such as sewer and water systems, that are not highly visible to the public? In the end, many allocation decisions are made to appease political priorities over park priorities because most park funding comes from political appropriations.

11 Leal, Donald R. (2002). Fencing the Fishery: A Primer on Ending the Race for Fish. https://www.perc.org/2002/06/01/fencing-the-fishery/

Other decisions are made by government officials in Washington, D.C., far away from the on-the-ground expertise, and they are largely dictated by which interest group lobbies most effectively. Neither politicians nor agency bureaucrats are required to ensure that revenues cover expenditures. Instead of covering the bottom line and efficiently allocating financial resources to the park areas most in need, the incentive is to direct focus to pet projects. As a result, U.S. national parks face nearly $12 billion in deferred maintenance needs, a topic returned to in chapter 12.[12]

Though we may turn to political environmentalism with good intentions, we must remember that incentives matter. Because government decision-makers do not have good information about the full costs of resource management or the incentives to consider the trade-offs, the environmental benefits are not maximised.

Conclusion: Getting the Incentives Right

Incentives matter in achieving environmental conservation outcomes. More government is not the answer to environmental problems. Instead, as the next chapter argues, where politics and government power often fail the environment, market environmentalism gets the incentives for conservation right. Property rights and voluntary trade align the incentives so that we can fully understand the trade-offs and maximise the benefits that come from conservation. Environmentalists that demand ever-more centralisation should take note of this.

12 See Regan, Shawn, Reed Watson, Holly Fretwell & Leonard Gilroy (2016). Breaking the Backlog: 7 Ideas to Address the National Park Deferred Maintenance Problem. https://www.perc.org/2016/02/16/breaking-the-backlog-2/

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5. Market Environmentalism: The Best Way to Protect Our Planet

Matthew Lesh

Market environmentalism is not an oxymoron. Private property, free trade, and entrepreneurship are the best methods to protect the environment.

The previous chapter established that government intervention often incentivises counterproductive environmental outcomes. But there is an alternative. This chapter presents a theory of market environmentalism. Market environmentalists seek to harness the ingenuity of humankind to address environmental challenges. It is an optimistic form of environmentalism, rejecting the doomsday defeatism that dominates public debate about the environment (see chapter 16). It seeks to take advantage of decentralised decision-making, markets, prices, property rights, and human ingenuity to improve our world. It

celebrates the likes of Nobel Prize-winning scientist Norman Borlaug, who saved over a billion people from starvation by developing and distributing technologies to substantially increase agricultural yields in the *Green Revolution*.[1] "Only by getting richer, smarter, and more knowledgeable can humankind create the science that will resolve our environmental dilemmas," science journalist Charles C. Mann said when paraphrasing Norman Borlaug's approach.[2] It is excited about technologies like carbon capture and storage, genetically modified food, lab-grown meat, electric cars, dissolving plastic, nuclear energy, and terraforming. Market environmentalism accepts some state involvement, particularly in allocating and safeguarding property rights, thus lowering transaction costs by providing the basis for well-functioning markets.[3] But it seeks to keep the state's role to a minimum, focusing on how to enable the market to operate efficiently.

The market approach is the opposite of the *command and control environmentalism* which was described in the previous chapter. This approach is often built on falsifiable claims, a fundamental misunderstanding of economics, ignorance of previous environmental scares, and a lack of understanding of environmental progress.[4]

Indeed, environmental progress is most striking in richer, developed countries, which have reduced air pollution, cleaned previously putrid rivers like the Thames, and opened green spaces for public enjoyment. Affluence, closely linked to freer economies and more liberal public policies, provides the necessary resources and public concern to address environmental challenges.[5] This is sometimes called the *Environmental Kuznets Curve* (see graph on next page), the inverted-U relationship between pollution and economic development. In the first stage of development pollution increases, but in the second stage, due to affluence, innovation, and social pressure, pollution decreases.[6]

The reason for this is not only that economic progress and prosperity makes people more aware of the environment, but also that, in general, the best way to protect the environment is not socialism, but rather free market and market-oriented solutions. This chapter will

1 Easterbrook, Gregg (1997). Forgotten Benefactor of Humanity. https://www.theatlantic.com/magazine/archive/1997/01/forgotten-benefactor-of-humanity/306101/

2 Mann, Charles C. (2018). The Wizard and the Prophet: Two Remarkable Scientists and Their Dueling Visions to Shape Tomorrow's World. New York: Knopf Publishing Group.

3 Anderson Terry L. & Donald R. Leal (2001). Free Market Environmentalism. Revised edition. New York: Palgrave Macmillan; Anderson, Terry L. & Donald R. Leal (2015). Free Market Environmentalism for the Next Generation. New York, NY: Palgrave Macmillan, 2015.

4 Shellenberger, Michael (2019. Why Apocalyptic Claims About Climate Change Are Wrong. https://www.forbes.com/sites/michaelshellenberger/2019/11/25/why-everything-they-say-about-climate-change-is-wrong/

5 As countries get richer there becomes a greater prevalence of 'post-material' values that prioritise the environment in Western countries, see Ronald Inglehart (2015). The Silent Revolution: Changing Values and Political Styles Among Western Publics. Princeton: Princeton University Press. This plays out in environmental outcomes, with substantial difference in environmental protection between wealthier European and North American countries and poorer sub-Saharan African countries, see Environmental Performance Index 2018. New Haven: Yale Center for Environmental Law & Policy. https://epi.envirocenter.yale.edu/

6 Grossman, Gene M. & Alan B. Krueger (1991). Environmental Impacts of a North American Free Trade Agreement. NBER Working Papers. https://ideas.repec.org/p/nbr/nberwo/3914.html

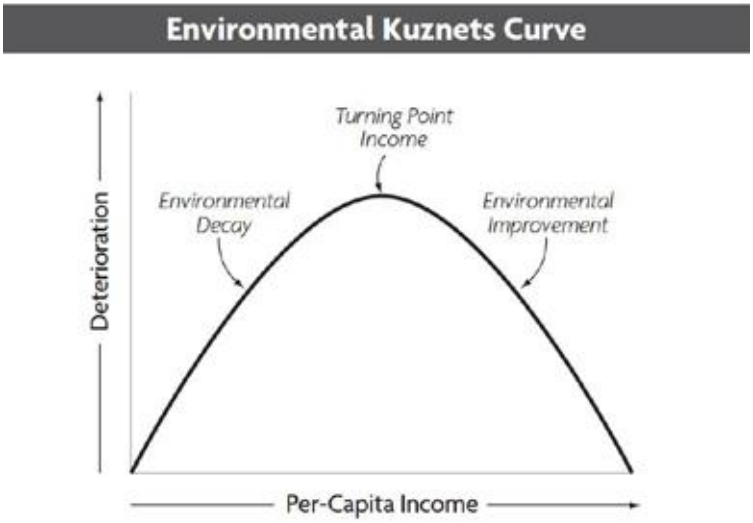

Figure 5.1 Environmental Kuznets Curve

Sources: Property and Environment Research Center, "Environmental Kuznets Curves", p.3. Figure 1, at http://www.perc.org/pdf/rs02_1a.pdf zit. in: https://thf_media.s3.amazonaws.com/index/pdf/2011/Index2011_Chapter4.pdf p. 56

look at the two key parts of such a market-centric form of environmentalism: (1) unleashing free markets to innovate (*free market environmentalism*); and (2) nudging markets in an environmentally friendly direction (*market-based environmentalism*). The nexus of these two distinct but related approaches is what we have termed *market environmentalism* throughout this book.

In the past, it has been claimed that these approaches are contradictory.[7] This chapter accepts that they are not the same but are complementary and necessary to address 21st century challenges. In the first instance, it is free markets unburdened by cumbersome red tape and central direction that can develop the technologies to reduce carbon emissions and improve our environment. In the second instance, market institutions, in particular property rights, can answer many challenging questions about trade-offs between environmental protection and immediate economic needs. In some cases this requires state intervention to allocate property rights for limited resources, devolving authority to local decision-makers, and pricing negative externalities, undermining pure 'free market' principles. However, this type of intervention should not be shunned by free marketeers, but rather be seen as an effective tool to ensure the proper functioning of the market, in the same way that state intervention provided by the rule of law and courts ensures that contracts are enforced.

Using the Power of Markets and Removing Barriers to Innovation

The profit motive is a splendid, much-maligned, and little understood device. For the Marxist, profit is inherently exploitative as it is apparently derived by underpaying the worker (taking their 'surplus value'). Alternatively, it is not uncommon for business profits to be framed as

7 Cordato, Roy E. (1997). "Market-Based Environmentalism and the Free Market: They're Not the Same." In The Independent Review I, no. 2: 371–386.

'stealing' from the consumer as if in a zero-sum game. It has also become fashionable to suggest that profit is achieved at the expense of the environment.[8] This is wrong. Profit is the reward for providing value to others.[9] It is what you get for creating a product whose worth to consumers is higher than what it costs to produce. How does one achieve a profit? In one word: efficiency. The key to achieving a profit is to produce a product that efficiently, and often creatively, limits the cost of its inputs while maximising value to customers. Since labour is a relatively expensive input, this most often means being innovative: adopting and adapting technology that increases the value of people's labour and uses limited resources more efficiently. If there is no profit incentive, there is little reason to use resources efficiently or to innovate. Therefore, the market system is not antithetical to the natural environment; it is precisely what enables us to get more from our economic activity while using less of our natural world. This is what leads to technologies that make fabric out of used plastic and energy from landfill waste; that make the best-use of even discarded resources. The great power of the market system is its ability to produce more with less.

> "The great power of the market system is its ability to produce more with less."

The efficiency of the market explains why, despite predictions of peak oil, rare earth metal shortages and imminent collapse of our agriculture and ecosystem, we never quite seem to run out. When prices of oil or rare earth metals or even land usage increase, there is an incentive to use it more efficiently: produce cars that use less petrol or agricultural techniques that produce more food, or otherwise explore to discover more and other resources. This is why over time we have more oil, copper, aluminium, and lead reserves despite increasing resource use. *The Economist*'s industrial commodity price index almost halved between 1871 and 2010 (for more examples of more efficient resource use, see chapter 16).[10] Ultimately, when prices increase, entrepreneurs are not only incentivised to search for more natural resources and better methods of extraction, which provide the supply that brings back down the price, but also to use existing resource-stocks more efficiently and sparingly.

Humans respond dynamically to scarcity. We are not stable and stuck. Innovation has enabled us to produce more using less to provide for the needs of a growing population.[11] As economist Julian Simon explained: the "human mind" has proven to be the ultimate limitless resource.[12] Ignorance of this key point is the mistake made by Malthus, *The Population Bomb*

8 Eisenstein, Charles (2014). Let's Be Honest: Real Sustainability May Not Make Business Sense. https://www.theguardian.com/sustainable-business/blog/sustainability-business-sense-profit-purpose.

9 Lesh, Matthew (2019). The Drive for Profit Has Raised Billions out of Poverty - Attack It at Your Peril. https://capx.co/the-profit-motive-has-raised-billions-out-of-poverty-attack-it-at-your-peril/

10 Resource price changes became the focus of an infamous bet, see Paul Sabin (2013). The Bet: Paul Ehrlich, Julian Simon, and Our Gamble Over Earth's Future. New Haven: Yale University Press.

11 Simon, Julian L. (1980). "Resources, Population, Environment: An Oversupply of False Bad News." In Science 208, no. 4451: 1431–37.

12 Simon, Julian L. (1981). The Ultimate Resource, 1st edition. Princeton: Princeton University

and the Club of Rome's *Limits to Growth*: if population had kept rising while crop yields remained stable, then millions of people would have starved as they predicted.[13] But thanks to human ingenuity we now produce enough food to feed 10 billion people – about 25% more than we need – and crop yields are forecasted by the UN's Food and Agriculture Organization to increase by 30% by 2050.[14]

Thus, free markets with low taxes and the limited necessary regulation enable innovation, economic growth, and protection of the environment. Anything that hampers the process of innovation, such as unfriendly taxation and red tape that prevents new entrants, is bad for the environment simply because it prevents these positive, innovation-driven effects of the market taking place. We can help the environment by removing barriers rather than introducing more. This is not to say that there is no role for the state in ensuring positive environmental outcomes, but rather, the key goal should be to ensure the market operates effectively to allocate our scarce resources.

The Importance of Property Rights

Environmental problems often stem from a lack of property rights. The *tragedy of the commons* concept (see also chapter 6), as discussed shortly in the previous chapter, illustrates this point. If something is owned in common, like fish stocks or arable land, the incentive is for each individual to consume the resource excessively to the detriment of others. Fishermen catch too many fish, not leaving enough for reproduction and sustainability. Farmers allow livestock to excessively graze the land, making it useless in the future. Corporations emit too much greenhouse gas into the common atmosphere. If the issue is that nobody owns the common resource, which leads to overuse, the logical solution is to ensure the allocation of property rights in scarce resources.

> "Ownership makes people good stewards of the natural environment, since they directly benefit in a higher property value. If you don't take good care of your property it becomes worth less."

Market environmentalism emphasizes the environmental benefits that derive from ownership, accountability, and trade.[15] Ownership means people take care of what they own, like the way people take better care of their own home compared to a rental. Ownership makes people good stewards of the natural environment, since they directly benefit in a higher property value. If you don't take good care of your

Press.

13 Ehrlich Paul (1997). Population Bomb, Reprint edition. Cutchogue: Buccaneer Books; Meadows, Donella H., et al. (1972). The Limits to Growth: A Report for the Club of Rome's Project on the Predicament of Mankind. New York: Universe Books.

14 Food and Agriculture Organization (2018). Thergani Future of Food and Agriculture: Alternative Pathways to 2050. Rome: Food and Agriculture Organization of the United Nations. http://www.fao.org/3/I8429EN/i8429en.pdf

15 Property Environment Research Center. Free Market Environmentalism. https://www.perc.org/about-us/what-we-do/free-market-environmentalism-2/

property it becomes worth less. When property is owned in common, in practice by the state, there is less incentive to protect the land as the individuals responsible are rarely financially punished for mismanagement.

> "Competitive and free economies bear stronger environmental outcomes than uncompetitive or unfree economies."

Accountability means holding people responsible for their actions to encourage better behaviour, like a driver who pays higher premiums on their insurance after a motor accident. With property rights, it is no longer some abstract, self-protective bureaucracy that pollutes rivers, but rather individuals in businesses who can be held to account for their actions. This in practice can take the form of a legal liability for the damage caused to common or other's property like a river. Enterprises with specific risk of environmental damage can also be insured or bonded, rather than regulated, providing an incentive to minimise environmental damage.

Trade ensures owners put resources to their best use. A conservation group can purchase land that they place a greater value on protecting than its alternative uses, otherwise known as the opportunity cost. Their greater willingness to pay for said-property shows that, of the alternative uses, the environmental one wins out. This, as Holly Fretwell of PERC explains, means everyone can benefit:

"When we have political environmentalism, we tend to get zero-sum, winner-takes-all type games. When we are looking at free market environmentalism, we are really trying to create innovative solutions that allow for trade and negotiation. These solutions respond to current desires through trade revealing the values of alternative resource uses. Alternatively, regulation is set at some time regarding some certain set of demands and desires that somebody perceived at that point in time."[16]

The idea that a system based on economic freedom protects the environment better than other systems is not simply theoretical. Countries with the most economic freedom perform 50% better on Yale and Columbia University's Environmental Performance Index compared to countries that are repressed or mostly unfree.[17] This index considers 24 indicators, including biodiversity, fisheries and pollution. The takeaway is clear: competitive and free economies bear stronger environmental outcomes than uncompetitive or unfree economies.

16 Fretwell, Holly & Kai Weiss (2019). How the Market Can Protect the Environment. https://www.austriancenter.com/market-environment-fretwell/

17 Weiss, Kai & Simon Sarevski (2019). Ikea's New Plan to Rent Furniture Shows How the Market Can Protect the Environment. https://fee.org/articles/ikeas-new-plan-to-rent-furniture-shows-how-the-market-can-protect-the-environment

Nudging in the Right Direction with Market-Based Approaches

On the basis of property rights and the reduction of barriers to access and innovation, there are several steps that can be taken to avoid the tragedy of political environmentalism (see previous chapter) even when purely private efforts are not available. This is by no means an exhaustive analysis of these steps, but rather a general introduction to many of the concepts that will be further explored throughout this book.

Community coordination

Economist Elinor Ostrom won a Noble prize in 2009 for her work which reconceptualised how we understand the tragedy of the commons.[18] Ostrom found that, faced with the risk of the tragedy, small communities do voluntarily develop norms to avoid overexploitation.[19] As far back as 1517, a common in the Swiss Alps was run by a collective of farmers using complex social schemes to ensure its maintenance and avoid exploitation. Bottom-up community responses can work just as - if not more effectively - than top-down direction. The next chapter will go deeper into this aspect of community coordination.

Allocating property rights

If the reason for environmental exploitation is the overuse of a common resource then the simplest solution is often to allocate private property rights.[20] Farmers owning their own land will ensure it is not excessively grazed as to become worthless in later seasons. Fishermen owning a sea or river will not overfish to the point of extinction as it would reduce future returns. Property owners have the knowledge and incentives to balance human needs and long-term environmental sustainability. Allocating property rights was the classic approach of the *Inclosure Acts*, which assigned ownership of 6.8 million acres across England and Wales between 1604 and 1914.[21] The private ownership of agricultural land has been linked to limiting overuse, as well as the development and adoption of modern crop production methods in the *Agricultural Revolution*.[22]

It is a common misconception that public spaces must be owned and controlled by the state if they are to be protected for environmental and recreational usage. There are thousands of cases of private, often not-for-profit nature preservation through land trusts (see chapter 8).[23] Further, many successful public spaces, such as the Detroit International Riverfront and

18 The Noble Prize (2009). The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2009. https://www.nobelprize.org/prizes/economic-sciences/2009/ostrom/facts/

19 Ostrom, Elinor et al. (1999). "Revisiting the Commons: Local Lessons, Global Challenges." In Science 284, no. 5412: 278–82.

20 Smith, Robert J. (1981). "Resolving the Tragedy of the Commons by Creating Private Property Rights in Wildlife." In Cato Journal 1, no. 2: 439–68.

21 UK Parliament. Enclosing the Land. https://www.parliament.uk/about/living-heritage/transformingsociety/towncountry/landscape/overview/enclosingland/.

22 McCloskey, Donald N. (1972). "The Enclosure of Open Fields: Preface to a Study of Its Impact on the Efficiency of English Agriculture in the Eighteenth Century." In The Journal of Economic History 32, no. 1: 15–35; Olsson, Mats & Patrick Svensson (2010). "Agricultural Growth and Institutions: Sweden, 1700–1860." In European Review of Economic History 14, no. 2: 275–304.

23 Land Trust Alliance (2015). National Land Trust Census. https://www.landtrustalliance.org/about/national-land-trust-census.

the High Line in New York are largely funded by private contributors. However, more could be done to enable environmental usage of land in the market system. As Shawn Regan explains, the United States system for bidding on public land requires leaseholders to harvest, extract, or otherwise develop the resources.[24] This means environmentalists cannot simply bid for the rights to use the land for an aesthetic purpose, undermining the key idea that market actors should decide on the best alternative use of a resource based on its price. The US-specific policy solutions regarding this are explored further in chapter 12.

> "Markets have proven to be the solution to environmental challenges, not the cause of the problem as is commonly thought."

There are also other quasi-property rights solutions. For example, a tradable permit system that grants access to a limited right to undertake certain behaviour. This has been applied to fishing and hunting, mining and timber extraction and water usage. While the initial decision of how much of the resource can be used must be decided by the state through environmental analysis, the subsequent choice about how the limited resources should be allocated can be undertaken by market actors. "In this way, property rights allow those who want cleaner land, water or air to charge those who want to use it for waste disposal and hence make polluters accountable for the costs they create," Terry Anderson and Donald Leal explain.[25] The ability to trade these permits allows for dynamic and efficient use over time, ensuring it is allocated to its best use. They can even be purchased by private conservationists or e*nvironmental entrepreneurs*, such as the Clark Fork Coalition in Montana who have returned 25 billion gallons to thirsty streams.[26]

The quintessential case study of successful allocation of property rights was provided by the New Zealand fisheries.[27] Before property rights were allocated, fish were held in common stock and fishermen had no constraints on how much they could extract which encouraged them to overfish in a classic *tragedy of the commons*. In 1986, New Zealand introduced a world-first quota management system (QMS), in which the government set a limit of each fish stock and allocated these to fishermen through Individual Transferable Quotas (ITQs). The ITQ, which can be bought, sold or leased in the same way as traditional property, gives the owner the right to catch a limited quantity of fish. This, along with other market-enabling reforms over the decades, have delivered the rebuilding of previously depleted inshore fisheries and ensured that catches are limited to levels that can be sustained while ensuring

24 Regan, Shawn (2019). Why Don't Environmentalists Just Buy the Land They Want To Protect? Because It's Against the Rules. https://reason.com/2019/11/18/why-dont-environmentalists-just-buy-the-land-they-want-to-protect-because-its-against-the-rules/

25 Anderson & Leal (2001), p. 8.

26 Anderson, Terry (2015). Free Market Environmentalism. https://www.hoover.org/research/free-market-environmentalism-1

27 Food and Agriculture Organization of the United Nations (2000). Use of Property Rights in Fisheries Management: Proceedings of the FishRights99 Conference, Fremantle, Western Australia, 11-19 November 1999; Connor, Robin (2001). Initial Allocation of Individual Transferable Quota in New Zealand Fisheries. http://www.fao.org/3/y2684e/y2684e19.pdf

continued economic benefit to the country. A broader study of 11,135 fisheries from 1950 to 2003 published in *Science Magazine* found that quasi-property rights "catch share programmes, have broadly succeeded to half, if not reverse, the collapse in fishery stocks."[28] They find that if a system of property rights for fish had been in place globally since 1970, the fisheries collapse would have been reduced by two-thirds. Despite limiting fishing in the short-run, systems of limited property rights ensure that fishing stocks are not depleted, protecting the environment and the long-run contribution to the economy. That there are nearly 200 catch-share programmes worldwide today is a testament for the success of this approach as well.[29]

> "If a system of property rights for fish had been in place globally since 1970, the fisheries collapse would have been reduced by two-thirds"

Internalising the cost

There are, in classic economic terms, negative externalities from production. That is, the broader social cost of producing a good is not always felt by the buyer and seller. The typical response to this is political environmentalism, as previously mentioned: the extensive use of state-centric regulation and subsidies to encourage and discourage specific behaviours. But this is problematic. It encourages rent-seeking by special interests, who shroud their demands in the language of environmentalism while attempting to siphon public resources to themselves.[30] It leads to ill-informed, ineffective and often costly green red tape, that makes life harder for enterprise without solving environmental woes.

The alternative to political environmentalism is the market environmentalist approach that seeks to leverage the power of prices by asking market actors to internalise the costs of external damage. Once they internalise the costs they are factored into production considerations. It is then in the interest of market actors to substitute away from using the problematic resource and innovate by developing products that use less of the resource. It is necessary to price these externalities so they factor into the choices made by market participants.

There are several ways to internalise costs. For one, as part of the market environmental framework, governments often have to simply define and enforce property rights more effectively. As chapter 9 explains, nuisance law is a property rights-based system that encourages internalisation. Apart from that, if the pure-market approach fails, carbon pricing based on cap-and-trade schemes or carbon taxation are other possible avenues to consider. The idea of taxing activities that have negative externalities is thought to have

28 Costello, Christopher, Steven D. Gaines & John Lynham (2008). "Can Catch Shares Prevent Fisheries Collapse?" In Science 321, no. 5896: 1678–81.

29 Environmental Defense Fund. Sustainable fisheries map. http://fisherysolutionscenter.edf.org/map

30 The alliance of moral righteousness and self-interest has been explored in the Bootleggers and Baptists phenomenon, see Smith, Adam & Bruce Yandle (2014). Bootleggers and Baptists: How Economic Forces and Moral Persuasion Interact to Shape Regulatory Politics. Washington, D.C: Cato Institute.

> "Markets and private property rights are a viable alternative to the misguided top-down government approach that has prevailed in environmental debates for so long."

begun with Prime Minister David Lloyd George's fuel tax, which was introduced in 1909. This has been called a *Pigouvian tax*, named after early 20th century economist Arthur Cecil Pigou.[31] He had the simple but ingenious idea to focus on taxing things that we dislike to ensure its cost was taken into account in production. Chapter 10 looks at the advantages and disadvantages of such a policy.

Conclusion

Markets and private property rights are a viable alternative to the misguided top-down government approach that has prevailed in environmental debates for so long. Markets have proven to be the solution to environmental challenges, not the cause of the problem as is commonly thought. This does not mean that there is no role for the state or that markets can solve every problem. On the contrary, the role of government is to lower the transaction costs for markets to function well and to ensure that property rights are allocated and environmental costs are internalised in the market. None of this requires excessive state-direction. It does mean removing barriers to innovation and creating the right incentives to protect the environment. Ultimately, market environmentalism is no oxymoron.

31 Pigou, A. C. (1932). The Economics of Welfare, Fourth Edition. London: Macmillan. https://oll.libertyfund.org/titles/pigou-the-economics-of-welfare.

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6. Localism: Opportunities and Limits of Decentralised Environmental Policy

Ben Ramanauskas

Rather than looking to centralised governments to solve environmental problems, local communities can often protect nature through self-government. Remembering the wisdom of Nobel Prize laureate Elinor Ostrom can help us see the virtues of localism.

How should we manage shared resources? Whether it's fisheries, forests, or pasture; if there is no clear owner, then they are in danger of being overused by individuals pursuing their own self-interest. In economic terms, this can lead to a long-term decline in maximum sustainable yield. Tragically, this can result in common resources becoming depleted. Indeed, there have been numerous examples of natural resources being exploited and ultimately depleted. Forests have been destroyed, pastures overused, and species of fish driven to extinction.

> "Property can be successfully managed by local communities without any regulation by central authorities or full privatisation."

This is what evolutionary biologist Garrett Hardin termed the tragedy of the commons in his 1968 essay.[1] Hardin built on the work of English economist William Forster Lloyd who argued that grazing lands held in common will be oversaturated with cattle because the food the cattle consume is shared among all herdsmen. This would ultimately lead to underinvestment, resource depletion, and the suffering of both cattle and humans.[2]

In economic terms once more, the tragedy of the commons may occur when an economic good is both rivalrous in consumption and non-excludable. These types of goods are called common-pool resource goods. A good that is rivalrous in consumption means that when someone consumes a unit of the good, then that unit is no longer available for others to consume; all consumers are rivals competing for the good, and each person's consumption subtracts from the total stock of the good available.[3]

It is this combination of characteristics that creates the tragedy of the commons. Each consumer maximises the value they get from the good by consuming as much as they can as fast as they can before others deplete the resource. This means that no one has an incentive to reinvest in maintaining or reproducing the good since they can't prevent others from appropriating the value of that investment by consuming the product for themselves. The good becomes more and more scarce and may end up entirely depleted.[4]

Such a situation is not desirable. It is often argued that the only way to avoid this is for the government to take a more active role by introducing regulations. But this approach has been proven highly problematic in chapter 4. Alternatively, the approach of strengthening private property rights is frequently cited, such as in chapter 5, as the most effective way to avoid common resources being destroyed. But even here, there are problems: for example, some individuals may prioritise their own property over that of their neighbours and by doing so risk causing damage to the neighbour's property; or the owners might simply lack the resources to effectively maintain and manage their property.

1 Hardin, Garrett (1968). "The Tragedy of the Commons." In Science 162, no. 3859, pp. 1243-1248.
2 ibid.
3 Wilkerson, Tanner (2018). Advanced Economic Theory. Essex: Ed-Tech Press.
4 ibid.

However, there is a third way. It was first articulated by political scientist Elinor Ostrom, the first woman to win the Nobel Prize in Economic Science in 2009. Ostrom demonstrated how local property can be successfully managed by local communities without any regulation by central authorities or full privatisation.

Ostrom conducted in-depth research into communities where resources were used by multiple parties. For example, she researched a Swiss village where farmers tend private plots for crops but share a communal meadow to graze their cows. Ostrom discovered that there were no problems with overgrazing. The reason was that a common agreement among the villagers was in place which stated that no one is allowed to graze more cows on the meadow than they can care for over the winter.[5]

Similar examples have been found in different locations around the world. Communities have been able to effectively manage shared resources without depleting them, whilst also avoiding conflict. Whether it is Los Angeles, Japan, Kenya, or Switzerland, small groups and communities can use and preserve common resources in a fair and sustainable way.[6]

> "One benefit of communities regulating common resources as opposed to government is that it benefits from knowledge which can only be acquired by experience and tradition."

Ostrom outlined eight principles for how common resources can be governed sustainably and fairly within a community. These are:[7] [8]

1. **Define clear boundaries of the common resource:** For example, groups that are allowed access to the common resource should be clearly defined.

2. **Rules governing the use of common resources should fit local needs and conditions:** The rules should be determined by local parties.

3. **As many users of the resource as possible should participate in making decisions regarding usage:** People are more likely to follow rules that they have helped create themselves.

4. **Usage of common resources must be monitored:** Users of the resource must be held accountable for not following defined rules and boundaries.

5. **Sanctions for violators of the defined rules should be graduated:** Rather than an immediate ban on access to the resource, violators are first subject to a system of warnings, fines, and informal reputational consequences.

5 Ostrom, Elinor (1990). Governing the Commons: The Evolution of Institutions for Collective Action. Cambridge: Cambridge University Press.
6 ibid.
7 ibid.
8 Cox, Michael, Gwen Arnold & Sergio Villamayor Tomás (2010). "A Review of Design Principles for Community-based Natural Resource Management." In Ecology and Society 15, no. 4.

6. **Conflicts should be resolved easily and informally:** Rather than lengthy and expensive legal disputes, systems should be established so that disputes are handled quickly and fairly and where cost is not prohibitive.

7. **Higher-level authorities recognise the established rules and self-governance of resource users:** In situations where there are multiple layers of governance, higher authorities, such as federal governments, must respect the rules established at a lower level.

8. **Common resource management should consider regional resource management:** Responsibility for governing the regional resources should start from the smallest local level and include the entire interconnected system, for example in the case of managing a regional waterway.

These design principles were deliberately formulated to avoid falling into the trap of being overly prescriptive and definitive. Indeed, cultural relationships between users and ecosystems, and the specific socio-economic and political settings of that community are essential in finding the right mechanisms to protect resources. She stressed that it was the great variety in rules that permitted adaptation, innovation, and flexibility, ultimately paving the way for maximal sustainability.[9] [10]

Ostrom's principles have been built upon and developed over the years. One of the great benefits of this approach is that it ensures that common resources can be utilised in a sustainable manner without the need for government regulation. This is important as regulations implemented by governments often have unintended negative consequences (see chapter 4).[11] [12]

Another benefit of communities regulating common resources as opposed to the government is that it benefits from what Friedrich A. Hayek termed tacit knowledge. This is knowledge which is difficult to transfer to other people through mere explanation. Rather, it is acquired through experience.[13] As such, it is difficult for government officials who often live hundreds of miles away to understand the situation. It is the people who live in the community that understand the situation best. They are the ones who have acquired this tacit knowledge through living in that community and working with its natural resources. As such, they are therefore the people who are best placed to manage these shared resources.

A related benefit of these systems stems from the fact that they are polycentric. This polycentricity allows multiple actors to be involved. As such, rather than just one body making decisions, multiple institutions or individuals take part. Therefore, the decision-making process is shaped by a variety of different people with diverse backgrounds and

9 Ostrom (1990).
10 Ostrom, Elinor et al. (1999). "Revisiting the Commons: Local Lessons, Global Challenges." In Science 284, no. 5412: 278–82.
11 Tietenberg, Tom & Lynne Lewis (2009). Environmental and Natural Resource Economics. Boston: Addison Wesley.
12 Fabricius, Christo, & S. Collins (2007). "Community-based natural resource management: governing the commons." In Water Policy 9, no. 2, pp. 83-97.
13 Hayek, Friedrich A. (1945). "The Use of Knowledge in Society." In American Economic Review 35, no. 4, pp. 519-530.

experiences. Furthermore, it creates an environment where experimentation and innovation can take place. As a result, new and creative solutions to problems can be found, and so natural resources can be managed more effectively.[14]

A further positive aspect of these models is how they enable individuals to enforce their rights and to settle disputes. Under more traditional models, if a person has their rights violated in some form, their only recourse is to take the matter to the law courts. However, this is often prohibitively expensive, meaning that individuals do not receive a remedy. Even if an individual or group can afford to take legal action, the litigation process can often be lengthy. As a result, it may take several years for a matter to be resolved or for the aggrieved party to receive compensation.[15]

Under community-based models, there are processes recommended for low-cost and swift forms of dispute resolution. As such, if one or more parties believes that they have been wronged can receive a remedy quickly and in a way which is affordable. This is important as it ensures that not only the rights of individuals are upheld, but also that the natural resources continue to be protected from exploitation.[16] [17]

> "Community-based systems have the potential to be highly effective at ensuring resources are used fairly and sustainably, particularly for classic conservation efforts."

We have seen that community-based models for managing resources have much to be commended for. For example, they are an effective way of ensuring that common resources are not depleted or destroyed while still allowing many people to enjoy the benefits of them. They achieve this by involving different groups in the decision-making process and encourage new and innovative ways of finding solutions to complex issues. They also enable disputes to be resolved in a fast and affordable way. Most importantly, they do this more effectively than government regulations.

However, despite the many virtues of local governance, this approach is far from perfect. In fact, Ostrom herself warned against viewing any solution as a panacea, and community-based models are no exception.[18]

Some commentators have argued that we should scale up community-based models in order to solve larger and more complex issues.[19] But the problem would immediately arise that community-based models work well in small communities where the participants know and

14 Carlisle, Keith & Rebecca L. Gruby (2017). "Polycentric Systems of Governance: A Theoretical Model for the Commons." In Policy Studies Journal.
15 Elliott, Debbie & Greg Allen (2020). A 3-Decade Long Water Dispute Heads to the Supreme Court. https://www.npr.org/2020/01/07/790136973/a-3-decade-long-water-dispute-heads-to-the-supreme-court
16 Ostrom (1990).
17 Ostrom et al. (1999).
18 Ostrom, Elinor, Marco A. Janssen & John M. Anderies (2007). "Going beyond panaceas." In PNAS 104, no. 39.
19 Conway, Ed (2019). Mallorca's orange-growers can teach us a lot. https://www.thetimes.co.uk/

trust each other.[20] Scaling up these solutions takes away the local aspects and decentrality of decision-making which enables this self-government to work in the first place. How could such a system work on a global scale to tackle a genuinely international problem such as global warming?

Indeed, minor penalties or social stigma are effective ways of encouraging compliance with the rules established by a community-based system in a small and perhaps isolated geographic location, but it is difficult to imagine how this could be translated to relationships between people at opposite ends of the world.

Moreover, as discussed above, one of the reasons why community-based systems work so well at a local level is due to tacit knowledge. This tacit knowledge is acquired through experience as a result of having worked closely with the resources in that area for years. It is likely that the members of that community grew up in that area and that they are the latest in a long line of family members who have worked with the resources for generations, developing traditions over time. As such, they alone are best placed to use this knowledge to help solve local issues. Yet, when it comes to global issues such as climate change, this tacit knowledge is less useful and so community-based systems would not be as effective.

In general, however, Elinor Ostrom has convincingly demonstrated how local solutions prove to be a viable avenue for the protection of the environment - at least at a local level. This approach may find its limits on global issues such as climate change, but community-based systems have the potential to be highly effective at ensuring resources are used fairly and sustainably, particularly for classic conservation efforts.

article/what-majorcas-orange-growers-teach-us-about-business-tz9p9mqp5

20 McGinnis, Michael & Elinor Ostrom (2008). "Will Lessons from Small-Scale Social Dilemmas Scale Up?" In Biel, Anders et al. New Issues and Paradigms in Research on Social Dilemmas. Boston: Springer, pp. 189-211.

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7. Global Action: Opportunities and Limits of International Environmental Policy

Mattias Goldmann

International climate treaties of the past were built on top-down visions which quickly showed the limits of global action. In the future, international environmental policy needs to follow market principles to succeed. The Paris Agreement was a positive step in that direction.

In the previous chapter, it was established that when it comes to environmental conservation, problems are often best tackled on the local level. Nonetheless, since greenhouse gases are global in their scope and do not cause immediate nuisance limited to the area where they are emitted, there appears to be a necessity for agreements being set up between countries or regions. This is why policy regarding global warming has often been delegated to the international realm.

> "For climate, emissions reductions have not yet happened on a global or systematic scale."

In this debate, it has often been said that we need to change the very economic system in which we operate; that the market-based economy or the continual emphasis on economic growth is the root cause of the failure to restrain climate change. In this chapter, I will argue that we need to better understand the opportunities that market-based solutions give us, following the TINA logic (*There Is No Alternative*):

1. We do not have sufficient time to change the economic system – those that argue for this have failed to grasp the sense of urgency in reducing climate-related emissions.

2. The track record of other economic systems is not impressive – there is ample evidence that other economic models have proven to be at least as environmentally damaging as the market economy, if not worse (as chapter 4 has shown). In fact, the four biggest emitters of Greenhouse Gases (GHGs) are all state owned, so not subject to the normal rules of the market economy.[1]

3. The argument for a 'green dictator,' as put forward by some philosophers, is murky at best, and the decision-making process to select such a ruler is difficult to fathom.[2]

4. The internationally accepted processes towards combating climate change that we have agreed upon, specifically the Paris Agreement, are rooted in a market-based economy. At the global level, we have thus already agreed – after protracted and very difficult negotiations – to a market-based approach. Indeed, there is a deep misunderstanding about the nature of the international climate accords that has only rarely and not very successfully been dealt with.

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1 China Coal, Aramco, Gazprom and National Iranian Oil. They are followed by the privately-owned Exxon Mobil, and then again a host of state-owned enterprises. See Riley, Tess (2017). Just 100 companies responsible for 71% of global emissions, study says. https://www.theguardian.com/sustainable-business/2017/jul/10/100-fossil-fuel-companies-investors-responsible-71-global-emissions-cdp-study-climate-change

2 For example by Torbjörn Tännsjö, Firmin DeBrabander, and Roman Krznaric. Sputnik News (2018). Swedish Philosopher Bashed for Demanding 'Global Climate Dictatorship.' https://sputniknews.com/environment/201812041070373633-sweden-climate-change-dictatorship/; Worrall, Eric (2017). The Conversation: Dictatorships Are Better Climate Custodians Than Democracies. https://wattsupwiththat.com/2017/06/08/the-conversation-dictatorships-are-better-climate-custodians-than-democracies/; Krznaric, Roman (2019). Why we need to reinvent democracy for the long-term. https://www.bbc.com/future/article/20190318-can-we-reinvent-democracy-for-the-long-term

Global Climate Agreements from a Market Perspective

When it comes to reaching global agreements, from human rights issues to the Millennium Development Goals, the United Nations has been the only holistic existing platform for doing so. This is no different in the case of climate agreements.

For climate, emissions reductions have not yet happened on a global or systematic scale, in line with Adam Smith's reasoning that those issues which are more obvious to the naked eye will be dealt with first.[3] However, this is also a way of understanding the latest years of at least partial success; climate change can no longer be seen as something that primarily affects other species (such as polar bears) or future generations – it is seen as here and now, with a new sense of urgency. This is proven by the hundreds of municipalities declaring climate urgency, the more than one thousand companies setting themselves science-based targets and the more than one hundred countries declaring net zero emission targets, and not least by the 2015 UN climate Paris agreement, which we will go through below.

> "In 2009, the one-size-fits-all and top-down approach of COP15 was rejected by many countries."

Throughout the past decades, several agreements have formed the basis for international climate action. Nonetheless, these have usually fallen apart - sometimes even while still drafting the plans, as was the case with the failure at the UN COP15 'Hopenhagen' climate meeting in 2009 which was intended to provide the world with its first all-encompassing legally binding climate agreement. The reason for this is that the UN climate change conferences - the Conferences of the Parties (COP) - are based on the principle of unanimity; i.e. if even one country is against it, there will be no decision. In 2009, the one-size-fits-all and top-down approach of the Copenhagen COP15 meeting was rejected by many countries. For much the same reason, the Paris Agreement predecessor, the Kyoto Protocol, which included individual country emission reduction targets, never entered into force in its second commitment period since not enough countries were willing to ratify it. This clearly shows one of the most crucial limits of the global top-down approach where binding targets are decided on the UN level: consensus is difficult to reach with over 200 countries participating.

In contrast, the United Nations Paris Agreement of 2015 attempted to overcome the problem of how to move forward in a context of consensus decision-making. Indeed, instead of top-down, centralised planning, it is based on the idea of every country delivering its own contribution towards meeting the joint targets in the way it sees fit; that was seen in both the *shared but differentiated responsibilities* as well as the *nationally determined contributions* (NDC). This ultimately means that in the Paris Agreement, the responsibility is more decentralised and placed on individual countries, who have to come up with their own solutions on how to become a clean nation. Interestingly, this was also the reason why Nicaragua initially refused to ratify it. The US decision to leave the Agreement, in contrast, is based on it being perceived

3 Smith, Adam (1776). An Inquiry into the Nature and Causes of the Wealth of Nations.

as 'unjust' to their national interests, which at least in this regard must be qualified as a misunderstanding since, under the agreement, every country is free to pursue what they see fit in light of the agreed-upon targets.

While the Paris Agreement is the fastest and most widely ratified agreement of its kind in the history of the United Nations, reaching consensus on the details has proven to be vastly more difficult. The most contentious issue of the Paris Agreement has been Article 6, where both COP24 and COP25 failed to make much headway. This is precisely because the market-based principles are at the core of the discussion. This article is to regulate the voluntary transactions between nations and companies, ensuring that emissions reductions are taking place at the lowest possible cost and with valuable, positive side effects. It builds on the *Clean Development Mechanism* (CDM) of the Kyoto Protocol, which allows emission-reduction projects in developing countries to earn *certified emission reduction* (CER) credits, each equivalent to one tonne of CO2. The credits can be traded and sold and used by industrialised countries to meet a part of their emission reduction targets, as well as used on the voluntary market for carbon offsetting. More than two billion CERs have been emitted to date, with almost 8,000 projects in developing countries, mainly within renewable energy. While there has been criticism that not all projects give additional emissions reductions compared to a business-as-usual scenario, there is broad scientific agreement that this kind of mechanism is necessary for further emissions reductions in line with what the IPCC deems necessary to meet the climate targets as defined by the Paris Agreement.[4] Market-based solutions that incentivise voluntary exchange are key, and when the market is threatened, so is the climate as we know it.

> "When the market is threatened, so is the climate as we know it."

The Paris Agreement includes a financing redistribution mechanism which might at first look seem to be at odds with liberal or market principles.[5] A closer analysis will show that it is more akin to a belated correction of a long-time market failure where one party was for centuries able to let other parties pay the external costs of its actions.

The negotiating parties of the United Nations Framework Convention on Climate Change (UNFCCC) - virtually all the national governments of the world - within the Paris Agreement agreed on a financial mechanism to handle the issue of externalities between countries. The overarching principle is "making finance flows [including private capital] consistent with a pathway towards low greenhouse gas emissions and climate-resilient development."[6]

4 Buen, Jørund (2013). CDM Criticisms: Don't Throw the Baby out with the Bathwater. FNI Climate Policy Perspectives 8.

5 Institute for Energy Research (2017). China and the Paris Climate Accord. https://www.instituteforenergyresearch.org/international-issues/china-paris-climate-accord/

6 Paris Agreement (2016). Article 2.

As is readily testified by the IPCC and other gatherings of climate scientists, there are already significant costs associated with climate change, temperature increases, and changes in weather patterns that are already taking place now (see introduction). These effects are asymmetrically distributed across the planet, and there is no correlation between the main carbon emitters and the countries that are suffering the bulk of the consequences.

There is, however, a fairly strong correlation between total carbon emissions over time and the level of economic development (though, as nations reach a certain level of prosperity this correlations weakens and in fact reverses); the concept of *absolute decoupling* between economic growth and climate-related emissions is fairly new and not many countries have been able to deliver on this for more than limited periods of time.[7] In the previous UN climate agreement, the Kyoto Protocol, this meant that countries listed under Annex 1 were to contribute to quantified emissions reductions whereas "non-annex" countries were not. As we have seen, this has been fine tuned under the Paris Agreement, including the financing of the Green Climate Fund (GCF), the Adaptation Fund and the LDC-fund, all of them UN instruments for climate mitigation and adaptation. The GCF, which is by far the largest of these institutions, has a clear instruction to minimise any market disruption it might create: "It is important to ensure that concessional terms do not displace investments that might have taken place anyway using commercial terms. Concessional forms of finance need to be designed to minimize market distortions and potential disincentives to private investment."[8]

> "We must understand that the Paris agreement, as a more bottom-up, pro-market agreement, will only provide the floor for climate action."

According to the unanimous decision in the UN, the world's developed countries are to collectively provide at least $100 billion a year from 2020 in international climate financing, including the aforementioned UN bodies but also ensuring an enabling environment for increased private capital flows.[9]

There is no formula for how much each country is to contribute. The largest emitters have contributed the most, including the US, Japan, Great Britain, and Germany, and developed countries with high historical emissions such as Sweden and Switzerland are among the highest contributors per capita, while countries that have only recently increased their emissions and thus have little in terms of historical climate debt or market failures, such as China or Vietnam, have contributed significantly less, and the poorest countries in terms of

7 OECD Environment Programme. Indicators to Measure Decoupling of Environmental Pressure from Economic Growth. http://www.oecd.org/environment/indicators-modelling-outlooks/1933638.pdf

8 Green Climate Fund (2013). Business Model Framework: Terms and Criteria for Grants and Concessional Loans. https://www.greenclimate.fund/documents/20182/24937/GCF_B.05_07_-_Business_Model_Framework__Terms_and_Criteria_for_Grants_and_Concessional_Loans.pdf/

9 Levitz, Eric (2018). Trump Deals New Blow to Paris Climate Accord Ahead of Conference. http://nymag.com/intelligencer/2018/11/trump-deals-new-blow-to-paris-agreement-ahead-of-conference.html

GDP per capita with accompanying low emissions, have not contributed at all. The financial contributions from the UN funds shows an almost inverse relation to income, even though it does not formally factor in GDP per capita when deciding which projects in the developing countries to co-fund. The LDC fund is an obvious exception, since it only finances projects in the least developed countries according to the UN definition.

The track record of such global agreements has also suffered from problems as reported by a study published in *Nature Climate Change* in 2015, which concluded that due to weak environmental oversight of the UN's 1997 carbon credit scheme, there were "perverse incentives" for some industrial plants in Russia to increase emissions, so they could then be paid to reduce them.[10] Financially rewarding countries that are less environmentally aware has proven to be a questionable strategy and a true decentralised, pro-market agreement should exclude such methods and loopholes.

> "From a pro-market view, it is worth pursuing global agreements while honouring their limits."

At least theoretically, it is possible to argue that this historical debt and market failure may in the future be corrected (in practice this is hard to fathom since the asymmetry of emissions continues). Once this parity is reached, financial institutions such as the ones mentioned here could be eliminated or replaced with other global instruments such as a cap-and-trade system. However, it may be prudent to add that there has until now been limited opportunities to reach a global agreement on such a system, which is why we should grapple and be on the lookout for other pro-market global policies that can help the environment - for instance, Clean Free Trade, as presented in chapter 11.

Furthermore, pro-market solutions should include ending market distortions such as fossil fuel subsidies, defined as financial or tax support given to those buying, producing, distributing or selling these carbon-intensive goods to the tune of $5.2 trillion annually and $10 million every minute, according to the IMF.[11] Far from being a subsidy dished out only in oil-producing and coal-dependent countries, the REN21 international policy network for renewables found that 112 countries around the world subsidise fossil fuels.[12] Ending the subsidies would cut global climate-related emissions by about a quarter and halve the number of early deaths from fossil fuel air pollution.[13] At the same time it would allow the market to function more freely.

It is vital to understand that a free-for-all survival of the fittest, the strongest, or the most unscrupulous actors on the market is not in line with the liberal market economy school of thought. Adam Smith insisted that harmony would emerge as people strike bargains with each

10 Schneider, Lambert & Anja Kollmuss (2015). "Perverse effects of carbon markets on HFC-23 and SF6 abatement projects in Russia." In Nature Climate Change 5, pp. 1061-1063.
11 Coady, David et al. (2019). Global Fossil Fuel Subsidies Remain Large: An Update Based on Country-Level Estimates. IMF Working Paper 19/89.
12 REN21 (2019). Global Status Report. https://www.ren21.net/wp-content/uploads/2019/05/gsr_2019_full_report_en.pdf
13 Coady (2019).

other, which would also mean that countries' resources will be more efficiently used towards the ends and purposes that people value most highly. Most major companies are strong backers of the Paris Agreement. Even so, we must understand that the Paris Agreement, as a more bottom-up, pro-market agreement, will only provide the floor for climate action, with much additional action required for the world to reach its climate targets.

Rather than choosing the alternative - isolationist approaches - as some countries have pursued in recent years, this opportunity for collaborative, multilateral solutions should be appreciated and taken. The opposite would merely lead to piecemeal, environmentally unsatisfactory solutions.

Going beyond this basic framework at the global level, a strong role is needed, as other chapters in this book have argued, for individual countries, companies and municipalities to implement effective environmental policy in a decentralised and localised manner as well. Political competition will make governments look at successful forerunners, who have done a particularly good job in becoming promoting environmental friendliness. Examples of this include Sweden,[14] Denmark,[15] and especially Chile.[16]

Conclusion

As we have seen, the Paris Agreement is in many regards a step in the right direction from a market perspective. Global action, if done in a way that is not top-down and one-size-fits-all, does not rule out frontrunners; on the contrary, the very reason we could reach a global agreement was because individual countries have paved the way for others and pledge to continue to do so, backed up and spurred on by economic actors. Thus, from a pro-market view, it is worth pursuing global agreements while honouring their limits. Completely rejecting any such attempts, meanwhile, would be a gargantuan failure on the part of market advocates that cannot and shall not be accepted.

14 Guzman, Andrew T. (2014). Overheated: The Human Cost of Climate Change. Oxford: Oxford University Press.
15 Irena. Denmark. https://www.irena.org/documentdownloads/publications/gwec_denmark.pdf
16 Nasirov, Shahriyar et al. (2018). "Renewable energy transition: a market-driven solution for the energy and environmental concerns in Chile." In Clean Technologies and Environmental Policy 20, no. 1, pp. 3-12.

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8. Success Stories of Market Environmentalism Around the World

Kai Weiss

Market environmentalism is not only a theoretical framework. It is an observable phenomenon around the world, where private conservationists, local communities, and technological innovations are protecting landscapes and wildlife. Thus, they are making the world cleaner and greener every day.

As has been established on a theoretical basis in the previous chapters, an environmental vision based on private property rights, the market economy, and entrepreneurship is a viable alternative to the misguided government interventionism demanded by many environmentalists today. Indeed, rather than asking the government for help, we should look at *enviropreneurs* - environmental entrepreneurs[1] - to solve many of today's environmental challenges.

What sounds possible on a theoretical basis can also be observed in the practical realm. Day in, day out, there are new ideas being put forward by entrepreneurs, innovators, and philanthropists to protect the environment and tackle and alleviate future climate crises. Indeed, just a little research results in hundreds upon hundreds of examples in which market environmentalism is at work. We can only focus on a handful of these here.

Preserving Nature Through Private Land Purchases

One of the most prominent examples of private conservation efforts has been land purchases by philanthropists and trusts.[2] In this, conservationists simply buy up land they want to see protected or preserved for recreational activities. This approach goes back decades. Indeed, while some national parks were created after the land was expropriated by previous owners - such as the Shenandoah National Park, where the US government used the power of eminent domain to expropriate properties from more than 450 families in order to create the park[3] - there are also counterexamples such as Grand Teton National Park. The Tetons became a protected area through a mass land buy-up by conservationist John D. Rockefeller Jr., the son of the Standard Oil founder.[4]

> "New ideas are constantly being put forward by entrepreneurs, innovators, and philanthropists to protect the environment and tackle and alleviate future climate crises."

The purchases were controversial, since Rockefeller did it in secret, buying small parcels of land from farmers and landowners without telling them about his actual plan of creating a natural park. But when he had eventually bought the property surrounding the mountain range, he donated all his new purchases to the US government under the condition that they would preserve it by instituting a National Park.

1 See Huggins, Laura (2013). Environmental Entrepreneurship: Markets Meet the Environment in Unexpected Places. Edward Elgar Publishing.
2 Yandle, Bruce (1999). Land Trusts or Land Agents?. https://www.perc.org/1999/12/01/land-trusts-or-land-agents/
3 Frazier, Bart (2006). The Eminent-Domain Origin of Shenandoah National Park. https://www.fff.org/explore-freedom/article/eminentdomain-origin-shenandoah-national-park/
4 Lednicer, Lisa (2017). Rockefeller and the secret land deals that created Grand Teton National Park. https://www.washingtonpost.com/news/retropolis/wp/2017/12/04/rockefeller-and-the-secret-land-deals-that-created-grand-tetons-national-park/

The Grand Teton is by no means the only such case. *The Economist* already reported in 2001 that "private parks are springing up all around the world," including in Brazil, Chile, Colombia, Kenya and South Africa. The magazine concluded that "if conservationists are to achieve their goals, therefore, they must work with the private sector."[5]

Ever since, this conservationist fervour has only picked up further. Trusts such as the World Land Trust are wholly focusing on buying up land with the aim "to protect the world's most biologically important and threatened wildlife."[6] The Nature Conservancy, one of the biggest trusts, has bought up "more than 103 million acres (41.6 million hectares) of land;" efforts that have included "protecting half a million acres in Montana and restoring habitat along the Gulf of Mexico."[7] The Land Trust Alliance numbers over 1,000 different trusts all over the world.[8]

> "Land purchases have proven highly successful in preserving nature even without the government rushing in to protect earth's wonders."

Meanwhile, the American Prairie Reserve currently purchases land in northeastern Montana to create "the largest nature reserve in the continental United States," which will encompass "an area larger than Yellowstone and Grand Teton national parks combined." In the end, the group wants to recreate what "Lewis and Clark saw when they passed through the region in 1805" - somewhat of an American Serengeti.[9]

Many more examples could be mentioned, like the Save the Redwoods League, which intends to "purchase the largest private sequoia forest in the world for $15 million"[10] or the countless other activists who have in recent years "attempted to acquire oil and gas rights in Utah, buy out ranchers' public grazing permits in New Mexico, purchase hunting tags in Wyoming to stop grizzly bears from being killed, and bids against logging companies in Montana to keep trees standing."[11]

5 The Economist (2001). Freelance conservationists. https://www.economist.com/science-and-technology/2001/08/23/freelance-conservationists
6 Terra Viva Grants Directory (2019). World Land Trust. https://terravivagrants.org/grant-makers/group-2-biodiversity-conservation-wildlife/world-land-trust/
7 Nature Conservancy (2020). Protect Land and Water. https://www.nature.org/en-us/what-we-do/our-priorities/protect-water-and-land/
8 Land Trust Alliance (2020). About Us. https://www.landtrustalliance.org/about-us
9 Regan, Shawn (2019). Where the Buffalo Roam. https://thebreakthrough.org/journal/no-10-winter-2019/where-the-buffalo-roam
10 PERC (2019). Snapshots. https://www.perc.org/2019/12/06/snapshots-4/
11 Regan, Shawn (2019). Why Don't Environmentalists Just Buy the Land They Want to Protect? Because It's Against the Rules. https://reason.com/2019/11/18/why-dont-environmentalists-just-buy-the-land-they-want-to-protect-because-its-against-the-rules/

Often enough, these private conservationists and trusts are prevented from further continuing their work by governments that do not acknowledge conservation as a viable usage of property, as will be expanded on in chapter 12.[12] Despite these difficulties, buying land has proven highly successful in preserving nature even without the government rushing in to protect earth's wonders.

Protecting Wildlife Through Enviropreneurship

> "After having establishing private ownership rights of wild animals, the number of wild rhinos increased significantly in South Africa."

Furthermore, private actors have also proven able to protect wildlife. Take the example of the white rhinoceros. In 1900, rhinos were an endangered species in South Africa. But through an auction system and the Theft of Game Act of 1991, which established private ownership rights of wild animals, the number of wild rhinos increased significantly, today standing at 20,000, "making it the most common rhino species on the planet."[13]

Similarly, "a coalition of entrepreneurs, donors, and hunters reintroduced 24 lions" into the Marromeu Ecosystem in Mozambique. Today, lions are back in an area they hadn't been in for decades.[14] In the US, bison are not only to be observed in Yellowstone or Theodore Roosevelt National Park, but also on normal ranches, such as the Green Ranch in Montana, owned by billionaire conservationist Ted Turner.[15]

Innovation Leading to a Cleaner World

Beyond philanthropic actions by private individuals or non-profit groups, the market economy has proven itself as a hotbed for innovators to come up with new ideas. One of the most prominent examples of that is, as Matthew Lesh already pointed out in chapter 5, the work of the twentieth century innovator Norman E. Borlaug, a plant scientist whose inventions of high-yielding crops not only averted massive famines around the world, but whose *Green Revolution* "worked to transform certain natural resources into new resources for the good of humanity, and ultimately, for the environment," becoming a prime example of what environmental stewardship means.[16]

12 Ibid.
13 Sat-Rolfes, Michael (2011). Saving African Rhinos: A Market Success Story. https://www.perc.org/wp-content/uploads/2011/08/Saving-African-Rhinos-final.pdf
14 Semcer, Catherine E. (2018). The Return of the King. https://www.perc.org/2018/12/14/the-return-of-the-king/
15 Watson, Lawrence R. (2015). "Enviropreneurship in Action." In Anderson, Terry L. & Donald R. Leal. Free Market Environmentalism for the Next Generation (pp. 139-151). Palgrave Macmillan, pp. 147-148.
16 Richards, Jay (2009). Normal Borlaug: Real Stewardship vs. Ersatz Environmentalism. https://www.aei.org/technology-and-innovation/norman-borlaug-real-stewardship-vs-ersatz-environmentalism/

Today's world is packed with endless ideas of how to attain a cleaner world, too.[17] Responding to the demands of consumers for more environmental awareness, big businesses have switched gears, offering more ecologically friendly products or more sustainable business models.[18] This includes alliances such as RE100, which is comprised of more than 220 major companies having committed to pursue net-zero emissions.[19]

It is not only the already successful companies who have changed tune. Start-ups with new ideas have also sprung forth. Many will surely fail in their endeavours - as is always the case - but if only some prevail, the environmental impact could be tremendous. These ideas span from "clothing and accessories out of recycled, ecologically, and equitably produced materials,"[20] to a so-called "Plastic Bank," which pays people for picking up plastic off the beach,[21] to lab-grown meat, all the way to biodegradable yoga mats[22] and even environmentally friendly hybrid diapers.[23]

> "More than 220 of the biggest global businesses have voluntarily committed to pursue net-zero emissions."

In the energy sector, new businesses are seeking to further scale up solar power while also working together with local entrepreneurs in the implementation phase,[24] or to use wasteful by-products in the beer brewing industry to convert the waste into "renewable natural gas, treated water, and organic fertilizer."[25]

On the community level, too, efforts are ongoing in many parts of the world to promote renewable energies. In these initiatives,[26] locals are coming together to provide funds for renewable energy projects in cooperation with local businesses, with the goal that the community as a whole becomes more environmentally friendly. Such projects (for example in the form of installing solar panels) are often carried out on public buildings such as schools,

17 See, for example, Lessler, Faye (2019). 34 Environmental Organizations and Nonprofits For a Sustainable Future. https://greendreamer.com/journal/environmental-organizations-nonprofits-for-a-sustainable-future; Delventhal, Shoshanna (2019). The 10 Fastest Growing Green Startups in 2019. https://www.investopedia.com/articles/investing/021116/10-fastest-growing-green-startups-2016.asp

18 Weiss, Kai and Simon Sarevski (2019). Ikea's New Plan to Rent Furniture Shows How the Market Can Protect the Environment. https://fee.org/articles/ikeas-new-plan-to-rent-furniture-shows-how-the-market-can-protect-the-environment/

19 See the list of companies here: http://there100.org/companies

20 For example, Jyoti, https://jyoti-fairworks.org, and Happy Earth Apparel, https://www.happyearthapparel.com.

21 Knoth, Jessica (2019). Companies with a conscience - the rise of social enterprise. https://smea.uw.edu/about/student-blog/blog/companies-with-a-conscience-the-rise-of-social-enterprise/

22 For example, LovEarth. https://www.lovearth.com.au

23 For example, gDiapers. https://www.gdiapers.com

24 For example, Solarkiosk. https://www.solarkiosk.eu

25 For example, PurposeEnergy. http://www.purposeenergy.com

26 For example, Ovescro. https://ovesco.co.uk/new-projects/

where the biggest communal benefit can be attained. This is a prime example of local action that was described in chapter 6 and shows that localised environmentalism is not just about conservation, but also about emission reductions.

Especially when it comes to trash in oceans as well as the revitalization of ocean life, many successes have already taken place. 4ocean has removed 4.7 million pounds of trash from the Gulf of Mexico since 2017 - funded by bracelets they sell.[27] The 25-year-old entrepreneur Boyan Slat, who started his endeavours at the age of 16, is working on a technology that would remove the plastic from our planet's oceans, and recently operationalised his first fleet.[28] On the American West Coast, fishermen and environmentalists have teamed up to protect reefs, coral beds, and fish stock - a process that has been called nothing short of "the biggest environmental story that no one knows about."[29]

The examples mentioned over the last few pages are of course a very small sample of what we call *enviropreneurship*.[30] Nonetheless, they can go a long way in demonstrating what was described in theory in the previous chapters: namely that the market economy and private individuals and groups acting voluntarily can conserve nature, protect wildlife, and bring forth innovations that make the world greener and cleaner.

27 CBS News (2019). Meet the ocean cleanup company that's removed 4.7 million pounds of trash. https://www.cbsnews.com/news/4ocean-meet-cleanup-company-that-removed-millions-of-pounds-of-trash-2019-06-15/

28 The Ocean Cleanup (2019). The Ocean Cleanup successfully catches plastic in the great pacific garbage patch. https://theoceancleanup.com/updates/the-ocean-cleanup-successfully-catches-plastic-in-the-great-pacific-garbage-patch/

29 CBS News (2019). "The biggest environmental story that no one knows about": The recovery of groundfish off the West Coast. https://www.cbsnews.com/amp/news/the-biggest-environmental-story-that-no-one-knows-about-the-recovery-of-groundfish-off-the-west-coast/

30 For more, see PERC. Environmental Entrepreneurs in Action. https://www.perc.org/map/

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9. Localism in Action: Policies and Methods for Decentralised Environmentalism

Julian Morris

Environmental problems are often of a local nature, and therefore need to be tackled in a more decentralised manner that prioritises individuals and communities. But what does this look like? How can we strengthen local efforts to combat environmental degradation? This chapter considers several different policies.

Many environmental problems are essentially local in nature – and require local solutions. In chapter 6, Ben Ramanauskas describes some of these, focusing primarily on common-pool resources subject to local management. This section focuses on other decentralised approaches. It begins with a discussion of ways in which private property regimes may effectuate environmental protection. That is followed by a brief discussion of some other decentralised solutions.[1]

Preventing Pollution Through Private Property Rights

One important decentralised way to solve environmental problems is through civil liability for harm to private property. Unpleasant sights, smells and noise have troubled man since his earliest days. Attempts to resolve these problems can be traced back at least to Greek and Roman law, which had provisions protecting property owners against damage caused by neighbours. In common law jurisdictions such as England and Wales, the tort of nuisance developed as a means to achieve the same result.

Beginning in the thirteenth century, courts in England began awarding injunctions and damages to those subjected to vile smells and unacceptable noise. The underlying principle was derived from the Roman Maxim *sic utere tuo ut alienum non laedas*: 'so use your own property as not to injure your neighbours.'[2]

> "By establishing clear and readily enforceable property rights, nuisance law enables parties to strike a balance between environmental amenities and costs."

By clearly delineating the boundaries of acceptable action, the *sic utere* rule provided a framework within which economic activity could take place in such a way as to limit the environmental damage inflicted on others. The rule discouraged activities that led to environmental damage and ensured, at least in principle, that if such damage did occur the perpetrator would be compelled to stop it and to compensate those affected.

Until the mid-19th century, liability in nuisance was generally strict, which meant that if a right was deemed to have been breached, it did not matter whether the party causing the harm had taken action to prevent it, nor could 'public benefit' be used as a defence. However, by establishing clear and readily enforceable property rights in this way, nuisance law enabled parties to bargain with one another, so that if the owners of the affected property were willing, they could sell their right to be free from pollution. This enabled parties to strike a balance between environmental amenities and economic activity.

1 The section is largely based on a paper I wrote for the Centre for Policy Studies and Direct Democracy in 2007: https://www.cps.org.uk/research/the-localism-papers-3-the-local-environment/

2 ibid.

Now, it is often claimed that civil liability of the kind just described is not an appropriate remedy where there are multiple sources of pollution or multiple affected parties. In other words – for most instances of what today would be called 'environmental pollution.' But there is ample evidence that injunctions were issued against individual polluters even when they were not the sole sources of pollution.[3] Such injunctions often benefited many property owners both directly, by reducing a source of pollution, and indirectly by enabling other affected parties to negotiate damages with the polluter. Furthermore, once one polluter was held liable, property owners affected by *other* polluters were in a stronger position to sue or negotiate with those other polluters.

It is also false to argue that nuisance law is unable to address situations where individual sources of emissions are only harmful when combined with other sources. This is simply false. For example, in several cases involving the owners of the banks of rivers (known as 'riparian' owners), multiple contributors to a nuisance have each been held liable for their contribution to the pollution, even though individually their actions would not have constituted a nuisance[4] – this is known as the combined effect rule.[5]

A Role for Environmental Organisations

In the 1893 case of *Young and Co v. Bankier Distillery Co*.,[6] Lord McNaghten specified that "every riparian owner is thus entitled to the water of his stream, in its natural flow, without sensible diminution or increase and without sensible alteration in its character or quality."[7] The clarity of riparian rights was utilized in an innovative way by John Eastwood KC, who in 1952 established the Anglers Co-operative Association (ACA), which acted on behalf of anglers and other riparian users – taking actions against polluters (by indemnifying the riparian owners against the costs of taking action).

The ACA offers an example of the role that environmental organisations might play if private law became the primary means of protecting the environment. Instead of lobbying for environmental regulations they would simply get on with the business of suing polluters by stepping into the shoes of affected parties.

A Return to Common Law Principles

Historically, liability for nuisance in Common Law regimes was strict. However, modern cases have eroded this standard, introducing negligence-like standards of care, such as "reasonable foreseeability".[8] In addition, the courts have established that statutory authority may be a defence; that is to say, if the party causing pollution had obtained express authority to carry

3 The paradigmatic case is St Helen's Smelting Co. v Tipping [1865] 11 HL Cas 642.
4 For example, Blair & Sumner v. Deakin [1887] 57 L.T.R. 522.; Pride of Derby Angling Club v British Celanese 2 W.L.R. 58 (C.A. 1953).
5 David Howarth, Muddying the Waters: Tort Law and the Environment, 41 Washburn L.J. 469 (2002) at 486.
6 [1893] 69 LT 838.
7 ibid. at 839.
8 Cambridge Water Co Ltd v. Eastern Counties Leather, PLC. 1 All E.R. 53; Hunter v Canary Wharf Ltd. 2 All E.R. 426.

on the polluting activity through regulatory, top-down approval, such authority overrides the rights of neighbours to be free from nuisance.[9] Ironically, environmental regulations themselves can constitute a form of such statutory authority.

For nuisance law once again to become an effective means of protecting the environment, the courts should return to the *sic utere* rule as established by precedents of previous centuries.

Using Contracts to Improve Environmental Amenities

> "In the recent past, the parties causing pollution have obtained express authority to carry on the polluting activity through regulatory, top-down approval."

While nuisance law offers a potentially powerful means of protecting the environment, it is suitable only where 'objective' harm has been done. Thus, where harm is subjective, alternative mechanisms are needed. A combination of property rights and contracts offers one such mechanism.

In 1808, Charles Augustus Tulk sold a property in London that included certain rights to the adjacent garden square. As was common, the title contained a covenant that explicitly prohibited the purchaser from building on the square. A subsequent purchaser, Mr. Moxhay, then sought to build on the square but was sued by Mr. Tulk for breach of covenant. The Court ruled that Moxhay was bound by the covenant because he had been given notice of it.[10] Thus, Leicester Square was preserved from the developers. In essence the court had created a way of converting a contract from a right *in personam* to a right *in rem* (a property right). Covenants have since been used widely to protect the local environment.

Other Alternatives to Central Planning

In an ideal world, it would perhaps be possible to rely on nuisance law and contracts to solve all environmental problems. Unfortunately, we do not live in such a world, so it makes sense to consider additional means of addressing high-priority concerns.

In the local context, this is likely to include the siting of "locally undesirable land uses" (LULUs),[11] such as waste management facilities (landfills, recycling stations, incinerators, and so on), power stations, chemical plants, and mobile phone masts. All of these facilities have become essential to modern society and look set to remain so for some time. However, they have also elicited considerable concern from the public, with many wary of having such LULU's pop up in their backyard, so to speak. So there is an urgent need to find pragmatic solutions for siting them.

9 Halsey v Esso Petroleum [1961] 2 All ER 145; Hunter v Canary Wharf Ltd. [1981] 1 All E.R. 353.
10 Tulk v Moxhay (1848) 41 ER 1143
11 Popper, Frank J. (1981). "Siting LULUs." In Planning Magazine, April 1981.

At present, the siting of LULUs is governed largely by land use planning regulations, which means decisions are taken by bureaucrats without necessarily taking into consideration relevant trade-offs. An alternative solution more consistent with a decentralised democracy involves communities vying with one another to site LULUs through reverse auctions. In the classic formulation, representatives of each community that is in principle willing to accept the presence of an LULU submits a sealed bid specifying the minimum amount it would be willing to accept in return for siting the LULU.[12] The auctioneer then chooses the lowest bid – as long as it is below the maximum the owner of the proposed facility is willing to pay. The winning community gets the LULU and the amount of compensation it bid – which may be used for example to offset local taxes.

More generally, planning decisions should be decentralised to the most local level possible. For example, in the UK planning could come under the auspices of the parish council. By decentralising decision-making to such a low level of political authority, constraints on the power of the planners would to some extent come from political competition: with many such abutting jurisdictions, local authorities would compete with one another to site great architecture and become hubs of economic activity, as well as taking into account the environmental concerns of their constituents.

What to Do About Roads?

Roads are both a blessing and a curse: they are absolutely essential, but their use often causes a nuisance to local residents and leads to environmental pollution. These problems are exacerbated by the open access nature of most roads, which causes them to be overused, leading to congestion.

Road pricing is becoming an increasingly popular solution - and rightfully so. However, it has often been implemented in a rather coarse way. For example, the congestion fee applied in London bears little relation to the degree of congestion: the same fee applies to vehicles entering the centre of London between 7am and 6pm, regardless of when a vehicle enters the congestion zone and how much time they spend travelling on roads within it. A proper congestion charge would be location-specific and would charge different prices at different times of day. Toll roads in France and the US already operate such flexible pricing schemes. Such a system could charge more at peak congestion times, more for heavy vehicles that cause greater damage to the roads, and more for vehicles that cause more pollution.

Tradable Permits

Pollution that is highly mobile and erratic in its choice of victims is another instance for which it may be challenging to apply nuisance: this is true particularly for low-level ozone, which can travel hundreds of miles and whose direction of travel will be dependent on local air currents. For such forms of pollution, local regulation may be necessary.

12 Kunreuther, Howard et al. (1987). "A Compensation Mechanism for Siting Noxious Facilities: Theory and Experimental Design." In Journal of Environmental Economics and Management 14, no. 4, 371-383.

In general, regulations that specify a desired environmental outcome and allow people (individuals, homeowners, businesses) to find the best means of achieving it are superior both economically and environmentally to regulations that specify the technology to be used in the hope that it will achieve the desired outcome. For example, if the objective is to reduce by a specific amount the ambient atmospheric concentration of a particular chemical that is emitted primarily by a few stationary sources (such as power stations and steel works), the least-cost method of achieving this is through the allocation and trading of emissions permits. (An alternative, which may be applicable when the target level of emissions cannot be readily identified or could lead to unacceptably high costs of abatement is to set a price on emissions, as is discussed in the context of carbon emissions in chapter 10.)

Emissions permit trading has been tried in several places. Possibly the most successful has been the scheme in Southern California, which economists have estimated saved billions of dollars on emissions abatement costs.[13]

An obvious advantage of the permit trading system is that it allows more significant improvements in the environment for any particular level of expenditure. In a world of scarce resources, there are limits on the political acceptability of expenditure on environmental improvement, so it is imperative that the resources spent on it are used as efficiently as possible. By keeping the costs of abatement expenditures down, more resources are available for investment in innovations that lead to improvements in productivity—and to better products. Ultimately, this means higher levels of economic growth and more wealth, which in turn means more resources that can be spent on environmental improvements.

Conclusion

Ultimately, by following the proposals laid out in this chapter, environmental protection could be localised, thus being more consistent with the needs and wants of individuals, whilst also being less influenced by a combination of vested interests and pressure groups. When individuals and communities are made responsible for environmental protection, often incentivised by the need to protect their private property, the outcomes will often be more effective, more accurate, and less economically distortionary than when mandated by far-away bureaucrats.

13 Schmalensee, Richard et al. (1998). "An Interim Evaluation of Sulfur Dioxide Emissions Trading." In The Journal of Economic Perspectives 12, no. 3, 53-68.

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10. A Debate over Carbon Tax

Our carbon tax debate will tackle the question whether carbon pricing is an appropriate market-based tool. Ben Ramanauskas argues that a carbon tax would internalise environmental damages and be an effective way to create a sustainable market economy that takes the environment into account. Martin Gundinger contends that a carbon tax would have major economic repercussions. Rather than constraining entrepreneurs, a pro-market policy should expand freedoms.

10.1 The Case for a Carbon Tax

Ben Ramanauskas

The introduction of new taxes should generally be avoided. They are often introduced out of political motivation to target unpopular groups. Moreover, they distort economic activity, stymie growth, and often increase the cost of living for the poorest in society.[1] [2] Furthermore, the tax burden among OECD countries is consistently growing,[3] and so it could be argued that introducing a new tax would have further negative consequences to an already dire situation.

However, some taxes do play a vitally important role in the functioning of a highly developed economy. Pigouvian taxes would fall into this category. These are taxes which help to offset the negative externalities of certain actions.[4] Take alcohol, for example. It is quite right that alcohol is legally consumed as it is enjoyed by millions of people and, in moderation, that enjoyment does not cause harm to other individuals or society. Unfortunately, many people consume alcohol to excess and this creates negative externalities in the form of the burden placed on the health service and criminal justice system. As these services are paid for by taxpayers, it is only right that these costs are internalised by those who are also enjoying the benefits. This is why the government levies a duty on alcohol.

> "A carbon tax would help offset the negative externalities of environmentally damaging behaviour."

The situation with carbon emissions is similar. Emissions are the result of activities which have brought unprecedented levels of economic growth and prosperity. However, these emissions are also seriously damaging the environment.

The scientific consensus is that man-made impacts on climate change resulting from carbon emissions has the potential to bring devastation to the planet.[5] As such, steps need to be taken in order to reduce carbon emissions.

1 Feldstein, Martin (2006). The Effect of Taxes on Efficiency and Growth. NBER Working Paper No. 12201.
2 Nichols, Donald R. & William F. Wempe (2010). "Regressive Tax Rates and the Unethical Taxation of Salaried Incomes." In Journal of Business Ethics 94, no. 4, pp. 553-566.
3 Ernst & Young (2016). New OECD data shows growing global tax burden and continued government focus on consumption taxes. https://www.ey.com/gl/en/services/tax/international-tax/alert--new-oecd-data-shows-growing-global-tax-burden-and-continued-government-focus-on-consumption-taxes
4 OECD Glossary of Statistical Terms (2001). Pigouvian Tax. https://stats.oecd.org/glossary/detail.asp?ID=2065
5 The Royal Society (2019). The Basics of Climate Change. https://royalsociety.org/topics-policy/projects/climate-change-evidence-causes/basics-of-climate-change/

A carbon tax offers a practical and effective solution. Increasing the cost of carbon-based fuels will incentivise energy companies to increase efficiencies in their processes and also switch to cleaner energy sources, thereby reducing carbon dioxide emissions. There is strong evidence that a carbon tax would be effective. For example, carbon dioxide emissions decreased significantly after Sweden introduced such a tax.[6]

Similarly, British Columbia introduced a carbon tax in 2008, which has resulted in a reduction of per capita emissions of 14%. The carbon tax also remained relatively low at $40 CAD on the purchase and use of fossil fuels and the funds from the tax have been delivered in the form of tax cuts for low-income British Columbians.[7]

> "Sweden and British Columbia have introduced carbon tax which resulted in reductions of carbon emissions."

Furthermore, a carbon tax also enjoys support from some of the most well respected economists in the world. It is notoriously difficult to get economists to agree on anything, and yet 27 Nobel Laureates, four former chairs of the Federal Reserve, and almost every former chair of the Council of Economic Advisers agreed that a carbon tax would be a good idea.[8]

A carbon tax would also be preferable and more market-friendly than the current plethora of different regulations placed on businesses and taxes on individuals. Businesses have to comply with numerous regulations which significantly increase costs for them, as well as creating burdensome bureaucracy.[9] Meanwhile, individuals are paying tax every time they fill up their car or book a holiday in the form of fuel and air passenger duties. This increases the cost of living, and often disproportionately impacts the households on the lowest incomes.[10] A carbon tax would simplify the system, making it easier for businesses and reducing the burden on struggling households.

At this point, it is important to emphasise that a carbon tax should only be introduced if it is in conjunction with the abolition of any other taxes and regulations designed to offset the negative externalities of carbon emissions. As stated earlier, businesses across the world already have to comply with myriad regulations and pay various taxes; a carbon tax would therefore only work if it was introduced as a replacement for, rather than an addition to, the current tax and regulatory framework.

6 Swedish Government (2018). Sweden Tackles Climate Change. https://sweden.se/nature/sweden-tackles-climate-change/

7 Government of British Columbia. British Columbia's Carbon Tax. https://www2.gov.bc.ca/gov/content/environment/climate-change/planning-and-action/carbon-tax

8 Maiello, Michael & Natasha Gural (2019). The Tax That Could Save the World. https://review.chicagobooth.edu/economics/2019/article/tax-could-save-world

9 McEldowney, John & David Salter (2016). "Environmental Taxation in the UK: The Climate Change Levy and Policy Making." In Denning Law Journal 28, pp. 37-65.

10 Ramanauskas, Ben (2017). Why the Cost of Living is So High. https://www.taxpayersalliance.com/why_the_cost_of_living_is_so_high

So, there is certainly a strong case for introducing a carbon tax. It has the potential to offset the negative externalities of carbon emissions and would also be less cumbersome to businesses. However, one could argue that a carbon tax on firms operating in wealthy European and North American countries would achieve very little. After all, countries such as China pollute more than Europe and the US put together.[11] Not only could this be ineffective, but it could also potentially mean that domestic companies become less competitive. They would face higher costs which would ultimately be passed onto consumers. As such, the case could be made that implementing a carbon tax in a country like the UK would be both ineffective and unfair.

> "Any carbon tax also needs to be border-adjusted."

There could be some merit to this criticism, if the government were to simply introduce a basic carbon tax. However, we should go one step further: Any carbon tax also needs to be border-adjusted. Such border adjustments are import fees levied by carbon-taxing countries on goods manufactured in non-carbon-taxing countries.[12] According to former WTO appellate officer Jennifer Hillman, this would ensure that energy-intensive industries in carbon-taxing nations are not unduly punished, also ultimately incentivising more countries to introduce a similar carbon tax.[13]

This would not be a tariff, such as those imposed by the current government of the United States. Such tariffs have been put in place to protect US firms from competition from foreign firms in order to give domestic firms an advantage. In reality, the tariffs imposed by the Trump Administration have hurt US firms, American consumers, and have exacerbated trade tensions around the world.[14]

However, there is no reason to expect a border-adjusted carbon tax to have such negative consequences. For example, as Hillman pointed out, it would ultimately lead not to a trade war, but to harmonisation, and would be well in keeping with WTO rules.[15] What is more, as pointed out by Nobel laureate Joseph Stiglitz, "Not paying the cost of damage to the environment is a subsidy." He argued for carbon border adjustments in order to remove the artificial advantage enjoyed by firms in countries where there are no or limited environmental protections.[16]

11 Friedrich, Johannes, Mengpin Ge & Andrew Pickens (2017). This Interactive Chart Explains World's Top 10 Emitters, and How They've Changed. https://www.wri.org/blog/2017/04/interactive-chart-explains-worlds-top-10-emitters-and-how-theyve-changed

12 Kortum, Sam & David Weisbach (2016). Border Adjustments for Carbon Emissions: Basic Concepts and Design. https://www.rff.org/publications/working-papers/border-adjustments-for-carbon-emissions-basic-concepts-and-design/

13 Hillman, Jennifer (2013). Changing Climate for Carbon Taxes: Who's Afraid of the WTO? http://www.gmfus.org/publications/changing-climate-carbon-taxes-whos-afraid-wto

14 York, Erica (2019). Tracking the Economic Impact of US Tariffs and Retaliatory Actions. https://taxfoundation.org/tariffs-trump-trade-war/

15 See footnote 13.

16 Stiglitz, Joseph (2006). "A New Agenda for Global Warming." In The Economists' Voice 3, no. 7, pp. 1-4.

It is perfectly possible to design a border-adjusted carbon tax in a way that is compliant with international law.[17] Here is a loose framework of how a WTO compliant border-adjusted carbon tax could operate in the short term:[18]

- The scope should be limited to carbon-intensive basic goods (e.g., cement, steel) to reduce administrative complexity and strengthen the environmental justification of the measure
- The adjustment should apply to imports only, and not benefit exports
- Differentiation of imports by country of origin should be avoided, although exemptions may be granted for imports from the least developed countries
- Imported products should be treated the same as 'comparable' domestic products, meaning that any climate policy obligation for importers must not be stricter than what is imposed on their domestic counterparts

> "A carbon tax should not be introduced in addition to other existing taxes and regulations. Rather, the other taxes and regulations designed to reduce pollution should be abolished."

- The adjustment should be based on a benchmark that reflects average performance, best available technology, or worst available technology in a sector, rather than actual measured carbon content of a covered imported product
- However, superior environmental performance of foreign producers (compared to the benchmark) should be accounted for, possibly by allowing importers to demonstrate the actual carbon content of those products
- A fair, transparent, and inclusive process should be sought throughout, providing opportunities for participation by affected countries
- Using revenues for climate finance transfers to developing countries can strengthen both the legal and political prospects of a border carbon adjustment.

Therefore, it is clear that concerns that domestic firms will be disadvantaged by a carbon tax are unfounded if the tax is border-adjusted. Likewise, fears that it could lead to trade wars are also unfounded.

As discussed above, taxes often increase the cost of living by increasing the price of goods and services. It is often households on the lowest incomes that are the most adversely affected in these situations. As such, a carbon tax has the potential to be regressive.

17 Mehling, Michael A. et al. (2019). "Designing Border Carbon Adjustments for Enhanced Climate Action." In American Journal of International Law 113, no. 3, pp. 433-481.

18 Mehling, Michael A. et al. (2019). What a European Carbon Border Tax might Look Like. https://voxeu.org/article/what-european-carbon-border-tax-might-look

However, this need not be the case. As research from the Tax Foundation in the US revealed, a carbon tax has the potential to bring in vast sums of revenue for governments.[19] This revenue could be returned to consumers in the form of a rebate. These carbon dividends would offset the regressive impact of a carbon tax.

As with a carbon tax, carbon dividends have received widespread consensus among leading economists. For example, over 3,500 of the most renowned economists in the US endorsed the plan.[20] There is also evidence to suggest that carbon dividends are effective. For example, such a policy has been introduced in Sweden, Switzerland, and areas of Canada. Not only has it led to decreases in carbon emissions, it has also successfully mitigated any of the potential regressive aspects of a carbon tax.[21]

Therefore, although a carbon tax has the potential to increase the cost of living for households and would, therefore, be regressive, this issue can be overcome by redistributing the revenue raised from the carbon tax to households based on their income - thereby offsetting the regressive aspect and potentially even making it a progressive tax.

As discussed above, one of the benefits of a carbon tax would be the opportunity it provides for the government to abolish regulations and other taxes designed to reduce emissions and offset negative externalities. These taxes and regulations place a burden on businesses and households. A single tax on carbon would simplify the system, thereby alleviating the burden on businesses and households.

However, it is not just the taxes currently in place, designed to offset the negative externalities of carbon emissions, which could be cut. As mentioned above, a carbon tax has the potential to bring in vast sums of revenue for the government. This increased revenue could be used to cut other more economically damaging taxes.

A carbon tax is considered a consumption-based tax. Generally, consumption-based taxes raise revenue with less distortionary effects than taxes on income or transactions, making them economically more efficient.[22]

Thus, a carbon tax could replace more distortionary levies such as corporate and income taxes, which lower productivity and have a negative overall impact on economic growth. They also have the potential to reduce employment opportunities and lower wages.

19 Pomerleau, Kyle & Elke Asen (2019). Carbon Tax and Revenue Recycling: Revenue, Economic, and Distributional Implications. https://taxfoundation.org/carbon-tax/

20 Wall Street Journal (2019). Economists' Statement on Carbon Dividends. https://www.wsj.com/articles/economists-statement-on-carbon-dividends-11547682910

21 Klenert, David et al. (2018). "Making Carbon Pricing Work for Citizens." In Nature Climate Change 8, pp. 669-677.

22 Bankman, Joseph & David A. Weisbach (2006). "The Superiority of an Ideal Consumption Tax Over an Ideal Income Tax." In Stanford Law Review 58, no. 1413.

Conclusion

This chapter has highlighted the numerous benefits of introducing a carbon tax. Implementing a carbon tax has the potential to internalise the negative externalities of carbon emissions in a manner that is less cumbersome than the current system of numerous taxes and regulations This is not only a logistical argument, but also a moral one: a free market can only operate fairly if negative externalities such as carbon emissions are accounted for. Indiscriminately polluting bears negative consequences for the rest of society that only a carbon tax can adequately internalise.

However, a basic carbon tax should not be introduced on its own, nor should it be introduced in addition to the other taxes and regulations. Rather, other taxes and regulations designed to reduce pollution should be abolished. Furthermore, the carbon tax should be border-adjusted to ensure that domestic firms are not disadvantaged and firms in countries which do not have the same environmental standards do not receive an unfair advantage. This should also encourage other nations to pursue a similar system.

Finally, the government could use the opportunity provided by the extra revenue raised through a carbon tax to cut and reform some of the more economically damaging taxes.

Therefore, there is a very strong case for the introduction of a border-adjusted carbon tax with carbon dividends. Such a policy would offset the negative externalities of carbon emissions in a way that is not cumbersome for businesses, does not disadvantage domestic firms, and allows the government to abolish and reform some of the more economically damaging taxes. A practical and sensible carbon tax can lead to rapid emissions reductions. The available evidence, both theoretical and empirical, point us in the direction of a carbon tax as the most effective tool in combating climate change.

10.2 The Case Against a Carbon Tax

Martin Gundinger

Implementing a carbon tax is one of the most popular policy tools in the environmental realm. The closer one looks at it, however, the less convincing the case for a carbon tax becomes. It is particularly important to see the debate over what to do about climate change as an economic problem based on costs and benefits of specific strategies. In this, we should always remember what the famous economist Friedrich A. von Hayek pointed out: "The curious task of economics is to demonstrate to men how little they really know about what they imagine they can design."[23] Looking at the current state of the climate change debate, it seems that the Hayekian approach to economics is not taken seriously enough.

23 Hayek, Friedrich A. (1988). The Fatal Conceit: The Errors of Socialism. Chicago: University of Chicago Press.

Strategies

Looking at general strategies of dealing with climate change, there are three strategies to choose from. The first one is often called mitigation. Within the mitigation strategy, it is attempted to limit the magnitude of warming. This is also the strategy preferred nowadays, and the Paris Agreement, outlined in chapter 7, is probably the most known for pursuing such a strategy (the temperature increase should be limited to well below 2°C above pre-industrial levels).[24] The second strategy is adaptation. Within this strategy, it is simply accepted that the environment is changing due to climate change and it is attempted to adjust to these changes in the best possible way.[25] The third strategy could be called reversal: Here, it is also accepted that circumstances are changing, but it is expected that technological progress in the future will make it possible to reverse at least some of these changes at a later point in time.

One of the tools used within the mitigation strategy is a carbon tax. This chapter will argue – first – that fighting climate change using the mitigation strategy is probably leading to high-cost and low-benefit outcomes, and – second – that doing so with a carbon tax will likely be unsuccessful.

Opportunity Costs

Every action has an opportunity cost. Simply said, the opportunity cost is the (expected) benefit of the highest valued route of action that was not chosen.[26] Normally, in action, the opportunity cost is lower than the benefit derived from the chosen action (otherwise, the choice would have been a different one). This changes, however, as soon as government interference enters the picture. The actions chosen then do not necessarily reflect the true preferences of the acting people anymore – the action is only chosen because of the government changing the framework in which action takes place. This will normally lead to high social costs of government interference.[27]

This is no different with actions regarding climate change mitigation. There are a multitude of problems in the world, but resources are scarce. How would the government know, however, that these resources are best spent on slowing global warming rather than on other problems? While it is true that climate change is an important problem for some people, it is quite obvious that it is not perceived as the most important problem in the lives of many people in the world. And this is understandable: Even though the economic situation is improving in most parts of the world, there are still many people confronted with problems related to war, poverty, and hunger. This does not mean that these people don't care about

24 United Nations (2015). Paris Agreement. https://unfccc.int/sites/default/files/english_paris_agreement.pdf

25 Intergovernmental Panel on Climate Change (2014). Glossary. https://www.ipcc.ch/site/assets/uploads/2018/02/WGIIAR5-AnnexII_FINAL.pdf

26 Wieser, Friedrich v. (1914). Theory of Social Economy.

27 Of course, this depends on the number of opportunities people have (or, more accurately, perceive themselves as having). The fewer opportunities people believe they have to use their resources, the bigger the impact of the government taking away their highest-valued opportunity tends to be. This is why people with the least perceived opportunities (i.e. poor people) tend to be hit hardest by government intervention.

the climate at all – it just means that for now, they perceive that there are more important problems to deal with and use their scarce resources on. Therefore, when it comes to justifying any action taken for climate change mitigation, it must be shown that the damage of climate change which can be avoided by mitigation actions is greater than the damage of government intervention.

> "A cost-benefit analysis on the introduction of a carbon tax fails by the IPCC's own data."

It is unlikely that a carbon tax is justifiable using this comparison. Just to make a simple comparison, one can look at the estimated costs of climate change mitigation and compare them to the costs of global warming. According to the IPCC AR5, the reduction in global GDP would be about 5% in 2100 as a consequence of sufficient mitigation actions. And yet, at the same time, the estimated costs of the amount of global warming that would be probable without mitigation actions are much lower in most studies. Taking average data, 5% of global GDP would have to be spent to avoid a 3% GDP loss from global warming. Therefore, a cost-benefit analysis fails by the IPCC's own data.[28]

A very high carbon tax would need to be introduced to lead to any meaningful reduction of consumption.[29] This is because most products responsible for high amounts of carbon emissions (such as gasoline and energy production) are very inelastic so that changes in prices have a limited influence on demand. Such a high carbon tax rate is likely not politically feasible in most countries.

To limit political resistance, it is sometimes argued that a tax-swap is necessary – meaning that some taxes should be abolished while a carbon tax is implemented so that, in sum, tax revenue stays the same.[30] However, that does not change the fact that a carbon tax is one of the economically most harmful taxes. This is mostly due to the narrow tax base of a carbon tax. Most studies conclude that even a revenue-neutral carbon tax abolishing some taxes on labour and capital would reduce economic growth.[31]

For example, one study estimates that there is only a minor positive effect when capital taxes are abolished in exchange for a revenue-neutral carbon tax, while for labour and consumption taxes, the effects on GDP would be negative.[32] Even if other taxes are abolished so that the public accepts such a high tax rate, it is likely a major burden on technological and, therefore, economic progress.

28 Murphy, Robert P. (2014). Using IPCC to Defeat UN Climate Agenda. https://www.instituteforenergyresearch.org/climate-change/using-ipcc-defeat-un-climate-agenda/

29 Bruvoll, Annegrete & Bodil Merethe Larsen (2004). "Greenhouse gas emissions in Norway: do carbon taxes work?" In Energy Policy 32, no. 4, pp. 493-505.

30 Taylor, Jerry (2015). The Conservative Case for a Carbon Tax. https://www.niskanencenter.org/the-conservative-case-for-a-carbon-tax/

31 Murphy, Robert P., Patrick J. Michaels & Paul C. Knappenberger (2016). The Case Against a U.S. Carbon Tax. https://www.cato.org/publications/policy-analysis/case-against-us-carbon-tax

32 Carbone, Jared et al. (2013). Deficit Reduction and Carbon Taxes: Budgetary, Economic, and Distributional Impacts Resources for the Future. https://www.rff.org/publications/reports/deficit-reduction-and-carbon-taxes-budgetary-economic-and-distributional-impacts/

Effect on Future Generations

Meanwhile, in the absence of a carbon tax, more wealth is created year in, year out, relative to a carbon tax scenario. This wealth can later be used for both adaptation and reversal strategies regarding climate change. Therefore, it is crucial for all actions aiming at mitigation to be more effective than any other action using the same (time-discounted) amount of resources at a later point in time – otherwise, resources are wasted which might be necessary when dealing with climate change at a later point in time. Taxing and spending massive amounts of resources now without impacting global warming significantly will worsen the ability of future generations to deal with the consequences of climate change as they will have fewer resources compared to a scenario without a carbon tax.

Relocation of Production and Consumption

> "The introduction of a carbon tax will worsen the ability of future generations to deal with the consequences of climate change as they will have fewer economic resources compared to a scenario without a carbon tax."

If a carbon tax is implemented by only some countries, some of the more carbon-intensive production will relocate to other countries.[33] As only relatively wealthy countries can afford to implement a carbon tax (poor countries would probably impoverish their population in short order), such a carbon tax likely leads to production going from richer to poorer countries. As there are fewer capital goods in poorer countries, the production there tends to be less efficient (it is only made relatively more efficient due to the carbon tax). This lower efficiency means that there will be more emissions per unit of output. Therefore, a carbon tax implemented by only some countries could lead to increased carbon emissions due to relocation of production.

This problem is even exacerbated if one considers that a high enough carbon tax would drive down demand in the country which implemented the carbon tax, thereby driving down prices of products with high carbon emissions in other countries. These lower prices will then lead to increasing demand for these products in these countries, possibly further increasing carbon emissions.

Externalities

Many carbon tax proponents argue that externalities need to be internalised, and in the case of carbon emissions, this could be done with a carbon tax. But externalities not being internalised is a consequence of ill-defined property rights in the first place.[34] Therefore, the solution to this problem ought to be a better definition of property rights – either by

33 Elliott, Joshua et al. (2010). "Trade and Carbon Taxes." In American Economic Review 100, no. 2, pp. 465-469

34 Dawson, Graham (2010). "Privatizing Climate Policy." In The Free Market 28, no.1, pp. 1-3.

government or by free-market arbitration agencies. Basing the justification for more government intervention on a failure of government (namely, defining property rights in a sensible way) seems to be an absurd strategy.

Even if we forget that problem for a moment, it is not at all clear how high the social costs of carbon emissions are. There are estimates all over the place, and some estimates are even negative – meaning that carbon emissions are a positive externality that, according to the logic of the carbon tax proponents, should be subsidised.[35] It should come as no surprise that these estimates vary wildly, as the estimation depends heavily upon both the variables considered and the assumptions made. Is it for example considered that even though some regions in the world become less inhabitable or the land less usable for some activities because of climate change, other regions become more inhabitable and economically usable? What about the effects of CO2 on plant growth? It is very difficult to consider all the positive and negative effects of carbon emissions in different areas and based on that, make an accurate estimation of costs and benefits of them.

Bureaucracy

Every new tax means a new bureaucratic burden on the economy. There will be fresh red tape, processes that need to be adapted to by businesses, etc. – in short, ultimately causing the working time where people should be economically productive to be used for bureaucratic purposes. It also means that more control over the economy is needed – after all, for the tax to be effective, it must be ensured that people comply with paying the tax. New taxes also imply new bureaucratic structures on the government side, as this is necessary for administration purposes.[36] All this further decreases productivity.

Conclusion

To summarise, a carbon tax:

- fails a cost-benefit analysis
- is highly unlikely to be implemented with a tax rate high enough to make any significant difference regarding climate change
- is a major burden on economic growth
- reduces resources available for adaptation and reversal strategies in the future
- could easily lead to increased carbon emissions if implemented only nationally or regionally
- is based on almost arbitrary assumptions about the social cost of carbon
- leads to new bureaucratic – unproductive – structures.

35 Havranek, Tomas et al. (2015). Selective Reporting and the Social Cost of Carbon. https://cerge-ei.cz/pdf/wp/Wp533.pdf

36 This is especially true for a border-adjusted tax.

Therefore, it should be accepted that a carbon tax is not a feasible tool to deal with the problems of climate change. Scarce resources should be used in ways that are helpful, not destructive. It is crucial to stop dealing with the problems of climate change in a way that makes us feel good and righteous, and instead, start doing what likely will work.

What works is pretty clear, even if it might sound counterintuitive to some at first: Remove roadblocks to economic growth and introduce tax reforms such as Clean Tax Cuts and tax-exempt Clean Asset Bonds (as described in chapter 11) as far as possible, encouraging environmental action rather than merely penalising allegedly bad behaviour. These would ensure that more resources will be available in the future to deal with the problems of climate change, using both adaptation and reversal strategies.

> "Instead of new taxes, existing roadblocks and barriers should be removed to expand opportunities to come up with new innovations while profiting from it personally."

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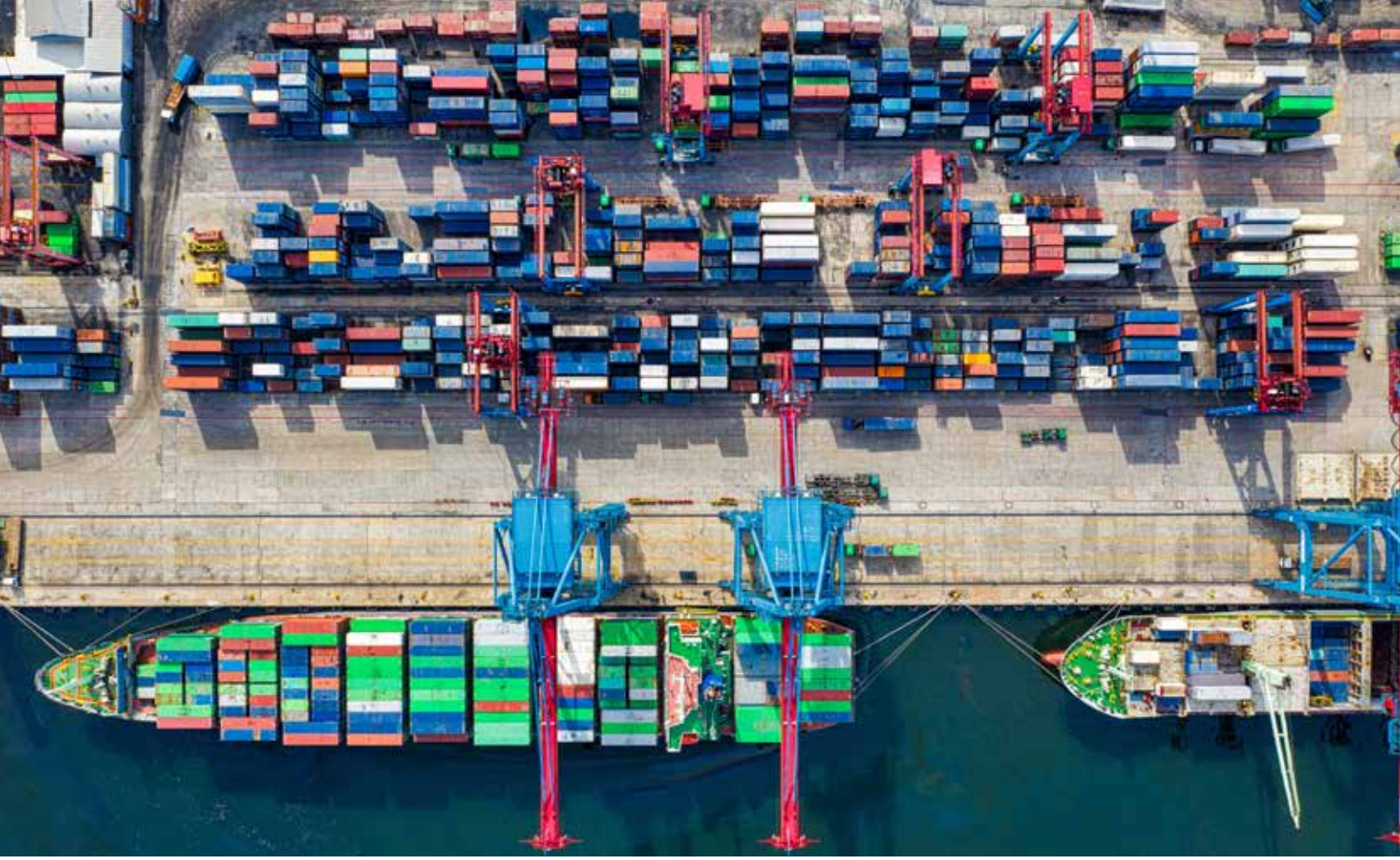

11. Clean Tax Cuts & Clean Free Market Policy Innovation

Rod Richardson & Barney Trimble

Rather than introducing more and more roadblocks in the economy, environmental policies have to zero in on reducing barriers and expanding freedoms to make it easier to be environmentally aware and innovative. Exploring opportunities, from tax to trade policy, is dearly needed.

Most economists are not yet aware of the newest market environmentalist paradigm: clean free market policy – which some experts believe may prove more efficient, impactful, popular, and economically beneficial than conventional policy options.[1] These ideas can be implemented anywhere, in any country, or even internationally, harnessing the power of the market to create better environmental outcomes.

The Origins of Clean Free Market Policy Innovation

This part was written by Rod Richardson.

In just this past decade, utility-scale renewables have passed a tipping point, becoming cheaper than fossil fuels, with unsubsidised profits growing for the best sited projects.2 That development implies three things:

First, the original assumption behind conventional climate policy, that clean energy technologies could not survive without some price adjustment mechanism, is now untrue, out-of-date, and growing increasingly off-base, as entrepreneurs continue to drive down costs faster than predicted. Other barriers, such as bureaucratic and incumbent-monopoly arrangements, as well as technological constraints on dispatchability, have now become the most important barriers blocking deployment of clean technologies, more so than price.

Second, with the advent of competitive clean technologies, the basic free market policy of removing barriers to competition and market access could now become the first best way to accelerate increasingly profitable energy innovation and directly remove key roadblocks to emerging environmental solutions.

Third, if clean technologies have new and growing profits, then taxes on those profits impose a major barrier to further capital mobilisation. Investment tax rate reduction presents a new policy lever we can pull, which would have the powerful effect of accelerating capital flows and increasing prosperity, innovation, participation and competition, while driving down the cost of clean solutions.

Considering this development, a new approach called *Clean Free Market Policy* (CFM policy) has become viable. It expands freedom, removes barriers, and opens markets, in order to allow low-cost clean innovators to compete and win.[3] When applied fiscally to tax barriers,

1 Shah, Jigar & Rod Richardson (2019). Clean Free Market Policy Beats a Carbon Tax. Here's Why. https://reason.com/2019/12/02/clean-free-market-policy-beats-a-carbon-tax-heres-why/; Winegarden, Wayne (2018). Free-Market Environmentalism. https://www.forbes.com/sites/waynewinegarden/2018/09/28/free-market-environmentalism/#1db5fdf31f1a

2 Richardson, R. Randolph (2016). Earth Day Shocker: Capitalism Saves the Planet (Part 1). https://spectator.org/earth-day-shocker-capitalism-saves-the-planet-part-1/

3 For briefs on clean free market policy, see Clean Capitalist Leadership Council. Policy Briefs. https://cleancapitalistleadershipcouncil.org/proposals/

the term *Clean Tax Cuts* (CTC) indicates the policy of reducing marginal tax rates for private clean investments while also, directly and indirectly, incentivising competition, participation, innovation, and open markets.[4] [5]

Classical & Neoclassical Roots of a New Idea

Clean free market policy is a surprising application of *laissez-faire* – the core 17th century free market policy principle that led to and underpins modern democratic capitalism and classical economics. It applies *laissez-faire* to the problem of pollution and negative externalities. It is a surprising application, because *laissez-faire* is often described as a government non-interference policy, so is sometimes blamed for allowing and accelerating pollution. But that is a misconception, a perverse way of thinking about or implementing *laissez-faire*. *Laissez-faire* does not mean the legalisation of murder or well-poisoning, nor the promotion of unjust private privileges either to pollute at public expense, or to block beneficial competitors through political power.

> "The assumption that clean energy technologies could not survive without some price adjustment mechanism is now untrue, out-of-date, and growing increasingly off-base. "

Rather, *laissez-faire* describes a freedom-expanding policy innovation strategy: as new challenges arise, we should first and foremost expand freedom and minimise barriers for universal participation in harmless, beneficial activities.[6] This delivers a popular consensus that reduces polarisation and gridlock, because it offers all carrots, and no sticks. Moreover, *laissez-faire* carrots are not conventional subsidies, but rather expanded liberties: at once an empowerment-maximising strategy, but also the least-harm approach, if properly applied. If the Holy Grail of climate policy is a new method to mobilise trillions of dollars for capital investment for a global transition

4 CTCs do not include conventional market-constricting incentives, such as municipal bonds, or most tax credit subsidies. For an overview of CTCs, see Clean Capitalist Leadership Council (2019). Policy Brief 2: Understanding Clean Tax Cuts (CTCs). https://cleancapitalistleadershipcouncil.org/wp-content/uploads/Policy-Brief-2-Understanding-Clean-Tax-Cuts.pdf

5 Murdock, Deroy (2009). Supply-Side Environmentalism. https://www.nationalreview.com/2009/07/supply-side-environmentalism-deroy-murdock/; Winegarden, Wayne (2019). Policies Should Address Global Climate Change By Incenting Innovation. https://cleancapitalistleadershipcouncil.org/wp-content/uploads/art-wayne-forbes-incentinnovation-191004.pdf

6 E.g., the education of one's choice. Milton Friedman's early work on educational choice and school vouchers is an example of this freedom-expanding strategy. School vouchers and charter schools may rely on government funding – so do not quite match the pure private market ideal – but they are a better, freedom-expanding solution versus centralised, bureaucratic public school systems – a consensus-builder which has won over many parents.

to clean infrastructure, then obviously harnessing the *laissez-faire* principle that created the phenomenal growth engine of capitalism should be considered perhaps the essential solution.

Conventional climate policy falls short precisely because it ignores the *laissez-faire* principle by raising barriers and restricting freedoms. More sticks than carrots, it drives its own opposition and gridlock. Conventional climate policy departs from classical principles because it is heavily influenced by the neoclassical ideas of Arthur Pigou, the British economist who first described pollution as a 'negative externality,' the costs of which are not captured in the price of goods. Pigou urged *Pigouvian taxes*; the solution of 'pricing' the externality by inflating the cost of the goods with a pollution tax, like a carbon tax, a proposal debated in the previous chapter.

Clean free market policy blends l*aissez-faire* and Pigouvian solutions. Yes, pollution externalities create a free rider problem that must be corrected to level the economic playing field – but dropping barriers to clean solutions may sometimes work better than imposing inflationary tax burdens on polluters and consumers. Especially when price is no longer the most important barrier to decarbonisation, and while fossil fuel demand remains highly inelastic, as a result of technical and anti-competitive barriers.

> "Competition offers a powerful on-target solution for both climate and poverty."

CTC and Clean Free Market Policies were conceived as an alternative kind of supply-side, reward-based pollution pricing – a tax rate cut (plus expanded liberties) for beneficial, pollution-reducing investments.

CTC/CFM is designed to make mitigation, adaptation, and reversal all more affordable, whilst being more politically palatable and generating less opposition and gridlock by using all carrots, and no sticks. CTC/CFM overcomes the most critical barriers to transition, by directly incenting innovation and breaking down bureaucratic market restrictions at the same time. It expands clean markets in ways conventional climate policy cannot.

Let's first take a look at the clean free market proposal that most eloquently proclaims the link between climate action and freedom, then consider how CTC mechanisms can open markets.

The Declaration on Energy Choice & Competition

If clean technologies can now compete and win, then we need to open closed markets by removing barriers to participation. That's the core proposal of clean free market policy, and an insight that several free market think tanks have distilled into a civil society *Declaration on Energy Choice & Competition*. The *Declaration* calls on government leaders to protect everyone's right to produce, buy, or trade the clean, reliable energy of their choice, and remove barriers to energy competition.[7]

7 Declaration on Energy Choice & Competition (2019). https://climateandfreedom.org/the-declaration-on-energy-choice-competition/

Uncompetitive energy sectors, worldwide, not only pose a critical path barrier to affordable clean energy deployment and innovation, but also to any hope for development and prosperity. Even in developed countries like the United States, studies show that competitive power markets decarbonise faster and cheaper than uncompetitive markets.[8] But worldwide, the situation is dire. In many developing countries, expensive, crony-dominated monopoly utilities often deliver energy poverty and rolling blackouts. Globally, 2.5 billion people must cook, heat and light their homes using dirty fuels, causing 3.8 million deaths (mostly women and children) each year.[9] In too many nations, no actual development is even possible, because there's no reliable power hook up. This critical path barrier drives pollution, poverty, mass migration, black markets, violence, and high emissions globally. Competition offers a powerful on-target solution for both climate and poverty.

To date, this key climate action barrier – uncompetitive energy markets – has been largely ignored as an international issue. Yet, a few intrepid pioneers have taken this on in places as diverse as Lebanon and Honduras.[10] Fundación Eléutera is successfully guiding a transformation of the Honduran power sector into a competitive market that looks much like ERCOT in Texas (touched on in chapter 12). The *Declaration*, inspired by such brave efforts, argues that the time has come for world leaders to address this with priority, via international agreements that open up energy and power markets to competition in order to unblock innovative solutions to climate and poverty. There is thus also a ground-breaking role to play for international pro-market and environmental think tanks on a coordinated policy initiative across many nations at once.

In light of the principles put forward in the *Declaration on Energy Choice & Competition*, and the fundamental importance of opening markets to competition, let's take a look at one of the most basic Clean Tax Cuts proposals, to understand how *laissez-faire* and Pigouvian principles come together as a new strategy for sustainable, pro-growth fiscal policy.

Clean Tax Cuts for Clean Product Innovation

Clean Tax Cuts are marginal tax rate reductions on returns from clean free enterprise.[11] As David Parham, an expert in sustainable accounting, pointed out during the very first CTC charrette, CTCs would be easiest to apply, and would work very well, in industries like the auto sector, where the metrics of sustainability are well understood and reported, and key stakeholders are motivated by profits.[12]

8 Retail Energy Supply Association (2019). Restructuring Recharged: The Superior Perfomance of Competitive Electricity Markets 2008-2016 (April 2017). https://www.resausa.org/phil-oconnor-thought-leadership

9 International Energy Agency (2019). SDG7: Data and Projections. https://www.iea.org/sdg/cooking/; World Health Organization. Air pollution. https://www.who.int/airpollution/en/

10 Mardini, Patrick (2015). Lebanon's Electricity Problem: A Zero Dollar Solution. http://limslb.com/en/policy-research/الحل-لمشكلة-العجز-المزدوج-في-كهرباء-لبنان-2/

11 See footnote 4.

12 For a timeline of CTC policy development, see Clean Capitalist Leadership Council (2019). Policy Brief 5: Timeline of Clean Tax Cut & Clean Free Market Policy Innovation. https://cleancapitalistleadershipcouncil.org/wp-content/uploads/Policy-Brief-5-Timeline-of-Clean-Tax-Cut-Clean-Free-Market-Policy-Innovation.pdf

In the US, for instance, thanks to *Corporate Average Fuel Economy* (CAFE) standards, we know the average vehicle fleet emissions for every automobile manufacturer. It would be a simple matter to take that one number, and turn it into a tax rate: the lower the fleet emissions, the lower the tax rate. If applied to all business and investor taxes, that would provide a very powerful mechanism to drive the automobile industry ever-cleaner. Firms with cleaner fleets would gain a competitive advantage. Consumers would see lower, not higher, prices for low-emission vehicles. All investors, large and small, could participate in such sustainable investments. Since investors, management, and employees have stock packages, CTCs would align corporate culture, from boardroom to shop floor, with the goal of lower emissions.[13]

The Clean Tax Cuts for Clean Product Innovation (CTC-CPI) model can work very well in any sector with well-defined metrics and stakeholders motivated by profits and taxes. In the power sector, it could motivate the sale of low-or-zero-emission power and tech-neutral innovation to deliver the best solution for any given market. In real estate, it can motivate tech-neutral low-emission construction and renovation.

Pros & Cons of Tailorability

CTC-CPI has strengths and weaknesses. It can deliver great tailored, industry-specific solutions. It offers an excellent, targeted incentive for tech neutral innovation. It creates incredibly participatory incentives, easy to use beneficially by all investors, consumers and companies.

Tailorability is really important, because CTCs can be tailored to take on very thorny problems, directly incenting things that are very hard to incent, like early, pre-profitable energy innovation, conversion of fossil fuel plants, demonopolisation of power sectors, conservation and reforestation, free trade, open markets, and competition.

The need to tailor these equity-side CTC mechanisms also presents a minor drawback. CTC-CPI really needs to be tailored to each sector, given differences in metrics of sustainability and regulatory environments. That's not a problem for industry-specific state or national legislation. But for economy-wide, multi-sector legislation, or perhaps even an international framework, it would cause complications. Fortunately, the CTC working groups came up with a far more broadly applicable CTC solution, as we shall discuss below.

Before turning from industry-specific to economy-wide CTC mechanisms, let's pause to consider how CTC-CPI – really the most basic form of CTC – compares to other kinds of incentives: conventional supply-side tax cuts, and conventional subsidies.

CTCs vs. Conventional Supply-Side Tax Cuts

CTCs were conceived from the start as a form of supply-side tax cut. Both propose marginal tax rate cuts on business and investment returns. Both have the same intention: to incent more work, investment, and mass participation in beneficial activity, for the purpose of making those benefits better, cheaper, and available for all, while also increasing prosperity

13 For bridging the regulatory gap between CAFE and CARB, see Adams, Ian (2017). Replacing Fuel-Economy Rules with Clean Tax Cuts. https://cleantaxcuts.org/wp-content/uploads/char-art-transp-cafectc-adams-170301-170414.pdf

for all. Both follow the principle of 'if you want more of something, tax it less.' Marginal tax rate cuts offer the most participatory kind of tax benefit, easiest for any taxpayer to use and benefit from, and are far simpler than other tax benefits, like deductions, credits, tradable tax equity, expensing, depreciation, etc.

CTCs Level the Playing Field

The key difference is that conventional supply-side tax cuts, broadly applied, take no notice of even large negative externalities caused by certain taxpayers receiving the tax cut benefit. By benefitting polluters, conventional supply-side tax cuts risk increasing pollution, as corporations ramp up production and output.[14] They also create an uneven playing field, because the polluters have an advantage of not paying for the damage they create, but pass that cost on to other taxpayers - which is especially unfair for the non-polluters who cause no harm.

CTCs level the playing field with respect to negative externalities, by removing some of the unfair tax burden from the non-polluters. Moreover, as we shall see, certain CTC designs can be broadly applied economy-wide.

CTCs Reduce Distortion

CTCs are consistent with distortion-reducing tax preferences. While economists are often sceptical of tax preferences, they do support a few that are justified by reducing economic distortions and expanding GDP. For example, lower capital gains and business income tax rates are justified on the grounds that investment taxes are more distortionary, and depress GDP more than other taxes.

All factors considered, CTCs reduce distortion far more, and level the playing field better, than conventional supply-side tax cuts. Not only do CTCs reduce the same distortionary harm of investment taxes, they can reduce the distortionary taxes even more because of the political palatability driven by intense public concern for mitigating climate and environmental damage. Moreover, they go on to reduce the distortion of negative externalities, the distortion of big government programmes, and also, as we shall see below, the distortion of anti-competitive markets.[15] CTCs are by no means meant to replace conventional supply-side tax cuts, but to enhance them, increasing both prosperity and environmental benefit. CTCs can accelerate the transition to a net zero-emission economy by lowering tax rates for clean free enterprise, to provide a pain-free means of turning capitalism into clean capitalism.

CTCs vs Conventional Tax Credit Subsidies

In the US, tax credit subsidies, like the Investment Tax Credit (ITC) for wind and solar, dominate clean energy incentive policy. They have helped unprofitable clean technologies to scale up, drive down costs, and transition to unsubsidised profitability. Historically, the ITC

14 On balance, that is. Capitalism and US tax policy do have some good drivers of efficiency baked in, too, in tension with baked-in incentives for some to seek rents and pursue free rider behaviors.

15 Winegarden (2018).

gave developers a tax credit worth 30% of project costs. The developer could use that credit to reduce other investment taxes owed, or trade it to another taxpayer with a large tax bill, hiring bankers and lawyers who specialize in tax equity trading.

Tax Credits Constrict Markets to the Super Rich and Waste Money on Middlemen

Unfortunately, making the unprofitable viable creates hideously complex transactions. These are difficult for small entrepreneurs and investors to use. Only the very highest income taxpayers, the Berkshire Hathaways of the world, have the massive income to fully offset all the credits thrown off by a big utility scale project. All other developers and investors must hand over a large slice of subsidy to extremely expensive tax equity traders, and must themselves be big enough to afford a back office dedicated to managing this artificial market, a huge distraction from their core business.

Ironically, US subsidy arrangements for wind and solar exclude potential participants and other clean technologies, while wasting dollars on middlemen. The result is an extremely constricted, non-inclusive market, dominated in solar by perhaps 15 really large firms, seven or eight of which are banks. It remains very hard for smaller investors and developers to participate in this market.

Robbing Peter to Pay Paul Gets Complicated

The root dysfunction here is that most conventional subsidies 'rob Peter to pay Paul,' where Paul is often the operator of a money-losing venture that would not survive without the subsidy. This means conventional subsidies often promote failure, reduce GDP, and potentially lead to subsidy dependency, and even dangerous economic bubbles. We saw this in Spain in 2008 – 2013, when over-subsidisation of the then-unprofitable solar industry collided with the global financial meltdown, driving unemployment over 20% for more than five years, up to 27% at the worst point.[16]

Easier for Everyone: Not Robbing Paul

By contrast, CTCs, like any supply-side tax cut, don't 'Rob Peter to pay Paul' but rather refrain from robbing Paul of his profits. That's an easy-to-use benefit that gives everyone, large and small, the opportunity to participate with higher profit. CTCs won't promote failure, because tax rate cuts don't benefit the unprofitable. And they are not wasted on middlemen, or reserved for the super rich. Rather they promote competition, participation and equal opportunity, and actually benefit the most successful low-cost innovators the most. This is a sharp contrast to conventional subsidies, where the best clean technology companies are held back, forced to lose customers, revenue, and market share to less efficient, subsidised money-losers who waste market resources.

Predictably, the shift to CTC would vastly expand the number of small to medium sized investors and developers able to compete in the market, and increase the tax benefit going to actual deployment, without increasing tax expense.

16 Trading Economics (2020). Spain Unemployment Rate. https://tradingeconomics.com/spain/unemployment-rate

Tech Neutrality: Pick Metrics, Not Winners or Losers

Entirely tech-neutral, CTC-CPI rewards profit earned while achieving an objective metric, such as low-or-zero emissions for transportation, energy, buildings or products, without dictating what technologies must be used to get there. Conventional tax credit subsidies like the ITC are neither tech-neutral, nor do they reward commercial success outright. The ITC picks specific technologies (often wind and solar) as winners, whilst excluding many clean technologies that might be more competitive today if it weren't for decades of subsidy discrimination.[17]

> "Clean Tax Cuts expand participation, innovation, and competition economy-wide, even world-wide."

It is important to note however, that picking specific technologies does have an important benefit for incentive policy: the legislature can know the incentive goes towards solutions with proven metrics of impact. The ITC could easily be more comprehensively tech-neutral. The pro-solar-&-wind discrimination of the ITC may be an artefact of the high expense and economic drag of conventional tax credit subsidies, which drives Congress to limit subsidised technologies to reduce tax expense and economic harm. A more cost-effective incentive, that actually contributes to GDP, might allow Congress to apply that incentive more broadly to every major metrics-based clean technology, economy-wide, more like an ordinary, broad based supply-side tax cut.

All the above applies to consideration of the next level of CTC design, a new, easy-to-use, leveraged supply-side incentive that levers open markets to expand participation, innovation, and competition economy-wide, even worldwide, as broadly and cost-effectively as possible.

Clean Asset Bonds & Loans and The Clean Free Market Act

The **Clean Free Market Act** (CFMA) proposes a rapidly scalable CTC strategy – a simple plug-and-play bill that any state or nation could implement to spark the creation of a powerful, national, or even global clean free market, defined by low taxes, no tariffs, and no barriers to participation in clean free enterprise.

Clean Asset Bonds & Loans (CABLs) provide the basic building block for this market: tax-exempt *private* debt.[18] CABLs allow private projects deploying qualifying pollution reducing technologies to acquire tax-free debt. Tax-free interest would reduce the interest rate by

17 This can lead to severe, environmentally damaging market distortions. Since wind is competitive, production over-subsidisation makes it effectively free, unfairly outcompeting and forcing the shutdown of numerous nuclear plants. CTC-CPI would level the playing field between wind and nuclear.

18 Clean Capitalist Leadership Council (2019). Policy Brief 3: Tax-Exempt Clean Asset Bonds & Loans (CABLs). https://cleancapitalistleadershipcouncil.org/wp-content/uploads/Policy-Brief-3-Tax-Exempt-Clean-Asset-Bonds-Loans-CABLs.pdf

about 30 percent, a benefit that would be easy to use economy-wide, because debt provides a critical, natural tool of capitalist finance, commonly used in every economic sector, by investors large and small.

Supply-Side Leverage

CABLs apply policy leverage (a clean tax cut) to financial leverage (private debt) to create a new kind of leveraged incentive that simultaneously drives down costs of capital and costs of clean energy and products, and also drives up return on equity. This improves on existing tax-exempt bonds, which are uniformly government bonds: on the other side of such debt is government – so no useful leverage effect.

By contrast, CABLs, by leveraging up equity returns, attract all kinds of investors, large and small, to both tax-exempt debt and taxable equity. This makes CABLs far more participatory than either tax credits or municipal bonds, which only benefit, and constrict markets, to high income investors. Easier to use and more broadly attractive than tax equity, CABLs allow low-cost innovators to expand faster.

CABLs for Participation, Innovation, Competition & Open Markets

Indeed, since CABLs incent entrepreneurial private developers and investors of every size, they will tend to push power markets in the direction of more competition, and build a powerful constituency for opening markets. That increased competition throughout bigger, open markets will drive innovation. Larger open markets act as a bigger incentive for new innovation. The bigger the potential market, the more profitable innovation looks as a potential investment.

CABL Leverage: More Tax Revenue, More Cost-Effective Impact, Less Waste

Leverage also makes CABLs far more cost-effective than conventional subsidies. They give up tax revenue where returns are low (the average yield on non-government debt in the U.S. is 3.67%) but harvest it where returns are high (the average return on equity is 13.63%).[19] [20] If we assume those returns for a new business, financed with 50 percent CABLs, 50 percent taxable equity, then the government would take in 370% more tax revenue on equity profits than they forgo on the tax-exempt debt.[21] CABLs, by reducing conventional subsidy waste, offer an easier-to-use, better-value deal to developers, without increasing tax expense for governments.

19 Damodaran On-line (2020). Cost of Capital by Sector (US). http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/wacc.htm

20 Damodaran On-line (2020). Return on Equity by Sector (US). http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/roe.html

21 13.63/3.67 = 3.714 as of January 2020. Assumes the same tax rate on all returns for simplification.

CFMA for Global Markets: Internationally Tax-Exempt CABLs

If applied internationally, with tax-exempt reciprocity between nations, CABLs start to look like the aforementioned Holy Grail of climate policy: a simple means to mobilise trillions of dollars in global capital flows for all the clean infrastructure needed to avoid the worst impacts of global warming – along with a host of other environmental challenges.

Any state or nation could adopt the CFMA as a bill or international agreement. If several join the CMA as a reciprocal framework, CABLs could then finance projects in any participating nation with tax-advantaged returns to investors in every participating nation. Clean assets and products would also trade between cooperating nations without tariffs.

The immediate advantages of adopting the CFMA, and so joining this new global clean free market, should be obvious to neighbouring countries: the potential to attract vast international capital flows for sustainable debt and equity investment, the latter taxable. The CFMA provides a powerful carrot – and strategy – to encourage nations of the world to open up their economies, in order to let in the vast capital flows of the clean free market.

CABLs would provide a better kind of 'climate justice': a mechanism for global-scale economic liberation and capital mobilisation, with sustainable investment flowing between the peoples of all participating nations, rich and poor, large or small. While government-to-government foreign aid transfers serve only to prop up corrupt dictators and kleptocrat cronies who deny their peoples economic freedom and opportunity, CABLs cut out the corrupt middlemen, and allow investment to flow from free people, to free people.

Clean Open Market InterNational Commitments

As part of clean free market policy, *Clean Open Market InterNational Commitments* (COMIN Commitments) could constitute an international alternative to the traditional NDC commitments of UN treaties (see chapter 7). For COMIN Commitments, national contributions would be largely achieved by nations committing to cooperate to open markets and remove all tax, trade, and bureaucratic barriers to climate solutions. Nations would commit to maximising a freedom-expanding approach using any of the consensus strategies suggested in this chapter and book: energy competition, clean free trade, the CFMA, CABLs, CTCs, localism, and more.

Free Markets First

COMIN Commitments would be a group commitment to reach Paris-consistent National Determined Contributions (NDC) targets by 2050, by leading with and maximising collaborative clean free market policies first. Intermediate targets would help evaluate if nations are on target. Even if more needs to be done at that point, expanding free markets will (a) expand prosperity first, so more resources are available to pay for policy fixes if needed later to fill in any policy gaps, if nations fall short on intermediate targets; and (b) allow the currently obstructed substitution effect of more economically punitive and inflationary market-based policies (if needed later) to function more efficiently. Price signals will work much better once markets have been opened and innovation has advanced, and barriers to technology transition have been lowered. This approach would make a great deal of sense to many

nations struggling to raise their populations out of poverty. Climate solutions that expand prosperity and freedom, and come with international investment, would be a welcome option. People would sign up for a commitment like that.

Up next, let's explore how CTC targetability will allow policy innovators to generate proposals that dovetail with the CFMA and COMIN Commitments, but even more directly incent difficult, high-value goals like early-stage innovation, entrepreneurship, competition, fossil fuel plant conversions, forest and natural resource conservation, and more.

The 'First-Five' Proposal for Early-Stage Energy Innovation

While CABLs would directly incent innovation in established profitable clean technologies, they cannot *directly* incent pre-profitable innovation, largely because pre-profitable innovation rarely uses debt financing.[22] So policies that directly incent pre-profitable innovation would be a wonderful complement to CABLs and the CFMA.

While tax rate cuts generally do not benefit unprofitable business models, they can be used to incent pre-profitable innovation if targeted at the transition to profitability. Here is an intriguing proposal that targets one of the more difficult kinds of entrepreneurship: early-stage energy innovation.

Energy innovation is essential but hard. Clean energy adoption is held back because of technical constraints. For renewables, intermittency leads to lack of dispatchability and reliability. For nuclear, security risks, safety concerns and project size drive opposition, delays, and cost overruns. Meanwhile, technologies for carbon capture, grid-scale storage solutions, fossil fuel plant conversion, zero-emission waste-to-energy and alternative fuels all have advocates, but few have yet achieved profitability or widespread adoption. Moreover, energy is currently very cheap, while first-of-a-kind plants are generally expensive, costing much more than incumbent technologies with their economies of scale. It is tough to make the numbers work until similar economies of scale emerge for each such clean alternative. We therefore need breakthrough energy innovation to overcome these limitations, accelerate clean energy adoption, and avoid the worst risks from climate change.

One well-understood bottleneck for clean energy innovation is that the first five commercial-scale plants for a new advanced energy technology are almost impossible to finance. Venture capitalists demand proof that the technology can work at commercial scale – but the only acceptable proof is, ironically, a handful of profitable plants up and running. Investor reluctance stretches out a self-reinforcing 'valley of death' for these projects: the time between start up and profitability is daunting. It is likely that a large number of technically feasible innovative technologies are stuck in this bottleneck right now.

Shrink the Valley of Death

The *First-Five* CTC proposal offers a possible way to shrink the so-called 'valley of death': improving the risk/reward ratio. This might be done by increasing the back-end reward, by granting tax-exemption on all business and investor income from the first five commercial-

22 CABLs do indirectly incent pre-profitable innovation, by building larger potential markets for new innovations.

scale plants deploying a new, better, zero emission technology (or add-on improvements, such as new storage or carbon capture) for a period of years, say 15, after the first profitable year.

First-Five CTC would significantly raise the profitability of these first five plants, making them easier to finance, and so shrink the valley of death. If the first five are successful, commercially and in terms of improved reliability and certified net emission reduction, then the valley of death has been conquered, and commercial-scale deployment of the new technology can move forward, being best accelerated by use of CABLs from that point on.

Conversion CTCs for Fossil Fuel Plant Conversions

Something like *First-Five* CTCs could help tackle one of the greatest barriers to de-carbonisation: the sunk costs in existing fossil fuel plants. Utilities owning such plants face not only loss of a stream of profits, but also large decommissioning costs – altogether a daunting disincentive to any clean energy transition. The same is true for industrial plants using fossil fuels for production.

But what if such plants could be profitably converted to run on clean or renewable fuels, like hydrogen, or waste biomass, or solar thermal? Or if future carbon capture retrofits, or electrochemical conversion technology adaptations, could make such plants much closer to zero-emissions? Such technologies might offer double-barrel benefits: direct conversion of a baseload plant from high to low emission power, and a profitable zero-emission path forward for fossil fuel plant owners, that does not result in layoffs and large financial losses.

This would provide a new option that fossil fuel plant owners and workers would all cheer. Especially if extra years, and revenues, could be added to the life of an asset. Converting such traditional opponents of climate action to new champions for climate action gives these kinds of projects an especially high value. To further incentivise this transition, the CTC benefits for fossil fuel plant conversions should be generous.

CABLs could further finance these conversions. *First-Five* CTCs could also apply to the first five of any new kind of new zero-emission plant conversion, making profits from such experimental conversions tax-exempt for 15 years or so.

CTCs for Conservation

A lot has been said about the need for climate policy to reduce greenhouse gasses by incentivising clean and renewable energy technologies to emerge. Yet, it is also important to not ignore the more direct concern for preserving ecosystems and wildlife. In fact, the most successful environmental policy precedent for the basic CTC concept ('if you want more of something, tax it less') is the conservation easement tax deduction.[23] Since its US introduction in 1976, the use of charitable conservation easements has exploded, with over 56 million acres conserved as of 2015.[24] American forests have rebounded in tandem, with 19 million

23 Not quite standard CTC for for-profit ventures, tax deductions for conservation might be considered a pre-existing form of CTC for charitable free enterprise.

24 Land Trust Alliance. National Land Trust Census. http://www.landtrustalliance.org/about/national-land-trust-census

acres of new forest added between 1990 and 2010. That is a lot of carbon sequestration, making the conservation easement tax deduction an outstanding accidental US climate policy.

Concepts such as CTCs and CABLs could easily be applied to further this on a global level, allowing for cross-national cooperation on rainforest conservation, as an example. Buying tracts of rainforest for conservation purposes, with the concomitant carbon sequestration benefits, could be financed by internationally tax-exempt CABLs, whilst profit from sustainable activities (such as eco-tourism or silviculture) should be subject to CTCs. Conservation easement tax deductions might even be designed with international reciprocity, where a German individual or business could finance the preservation of land in, say, the Congo, whilst receiving tax deductions for that in Germany. Nevertheless, all this must go hand in hand with clearly defined property rights, as has been emphasised throughout this book. A variety of CTC mechanisms could provide powerful conservation solutions, but only if tied to a framework of land tenure property rights and land title clarification, and reinvigoration of the rule of law. Further, many of these sustainable land-use solutions will require the development of certification systems that allow the identification of properties and products to which CTCs or market-based incentives can be awarded. Yet, despite the obstacles, the direction our environmental policy should be heading in is clear.

The US example of conservation tax deductions empirically shows that CTC concepts have worked in the past. By implementing similar policies as presented here, governments and international organisations can make headway in environmental policy, by using the right combination of universal economic rights and incentives for good stewardship.

Clean Free Trade for Environmental Betterment

This part was written by Barney Trimble.

Climate change, as a global problem, requires globally applicable solutions. Trade policy presents a few options worth considering.

Conventional free trade offers an obvious advantage: it lifts millions out of poverty and gives them the means to improve their lives. But since it takes no notice of negative externalities, it also promotes polluters and gives them a free ride for the cost of damages imposed on nations, near and far.

Nonetheless, with free trade being one of the most powerful connections between countries and continents, harnessing this interconnectedness is vital to tackling the truly global aspects of climate change. Through such voluntary cooperation between people and companies across borders, new ideas and new businesses can more easily spring forth and find a global market. As explained in chapter 5, given different regional advantages, free trade means more can be produced with less resources, thus resulting in both more sustainable production processes, and more prosperity for all.

Unfortunately, despite these well-understood advantages, free trade remains very hard to achieve or maintain, being under constant assault by special interests seeking political protection. Can we make free trade better for the environment, and also easier to achieve?

Clean free trade (CFT) – the removal of tariff and trade barriers on environmentally beneficial goods and services – may prove easier to achieve than conventional free trade, by riding the growing public pressure for environmental solutions. It may also help persuade a large environmental constituency that free trade in general, within a clean free market framework, offers the essential macro-conditions to scale and speed innovation of climate solutions, some unforeseen by today's experts. Clean free trade itself would allow greater deployment-led innovation, and greater market rewards and acceleration for successful eco-innovators.

CFT, at its essence, is crucial in bringing forth more innovations and cleaner technologies on a global scale, and would be a useful component of any strategy to make trade, in general, more popular and politically feasible.

The Agreement on Climate Change, Trade and Sustainability (ACCTS)

While all of the international proposals discussed so far in this book have clean free trade elements inherent to them, none takes that on quite so comprehensively as the Agreement on Climate Change, Trade and Sustainability (ACCTS), which was announced in 2019 by the governments of New Zealand, Iceland, Fiji, Costa Rica, and Norway.[25] The initiative revolves around three core policy proposals:

> "Achieving global clean free trade has to be at the top of the WTO agenda."

The first is the removal of tariffs on environmental goods and services. This builds on the agreed-upon definition by the Organisation for Economic Co-operation and Development and Eurostat: "activities which produce goods and services to measure, prevent, limit, minimise or correct environmental damage to water, air and soil, as well as problems related to waste, noise and eco-systems."[26] In practice, these goods include parts for solar panels, wind turbines, air quality monitors, and the like - as well as the technological innovation that makes them all possible.

Second, ACCTS aims to establish concrete commitments to eliminate fossil fuel subsidies. The fossil fuel industry received global subsidies in excess of $4.9 trillion in 2015, distorting energy costs. Experts say that the abolition of these would have reduced global carbon emissions by 20%, deaths by fossil fuel air pollution by over half, and saved revenue equivalent to 4% of global GDP.[27]

The third core goal is the development of voluntary guidelines for eco-labelling programmes and mechanisms. These are intended to provide consumers with more information about the environmental cost of products through a universal set of standards. Standards also

25 Steenblick, Ronald P. & Susanne Droege (2019). Time to ACCTS? Five countries announce new initiative on trade and climate change. https://www.iisd.org/blog/time-accts-five-countries-announce-new-initiative-trade-and-climate-change

26 ibid.

27 Coady, David et al. (2019). Global Fossil Fuel Subsidies Remain Large: An Update Based on Country-Level Estimates. https://www.imf.org/en/Publications/WP/Issues/2019/05/02/Global-Fossil-Fuel-Subsidies-Remain-Large-An-Update-Based-on-Country-Level-Estimates-46509

provide a framework essential to any incentive policy like CTC. We can only incent the supply and demand of eco-beneficial products and services if we can reliably identify them. With consumers on board, providing such information will reward more environmentally friendly businesses, while incentivising others to follow suit.

Ultimately, trying to model after ACCTS and working towards more clean free trade agreements with other countries should be a cornerstone of any nation's environmental policy. On the international level, commitments by the World Trade Organisation (WTO) to eliminate environmental trade barriers has to continue with the highest priority to achieve full and global clean free trade within the near future.

Conclusion

This non-exhaustive list of clean free market policy recommendations has, at its heart, a commitment to expanding freedom for beneficial activities. ACCTS, CFMA, COMIN Commitments, and the *Declaration on Energy Choice & Competition* all propose a range of new national and international strategies to break open markets to greater competition, innovation, participation, and access to clean products, energy, and services. Policy innovators should consider how the strongest elements of each might be combined in both national and international frameworks. Can clean free trade agreements encompass an agreement to open energy markets to national and international competition, even trading power across cheaper, cleaner, more reliable transnational grids? Can a new generation of supply-side incentives, like CABLs and other clean tax cuts, provide an international carrot for freedom, a lever to open markets, unleash capital flows, and lift billions into sustainable prosperity? Policy innovation must now catch up to technology innovation, if we hope to turn capitalism into clean capitalism.

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12. United States: A Market Environmentalist Vision for America

Ganon Evans, Carter Harrison & Nick Lindquist

To protect American wilderness and reduce carbon emissions, the United States should expand opportunities for private enterprise and conservationists to put environmentalism into action. Moreover, it should reduce barriers to competition and open up energy markets across the country.

In chapter 11, several general policy proposals, such as Clean Tax Cuts and Clean Free Trade Agreements, were presented that the US government should consider implementing and promoting on the global stage. Beyond that, this chapter will present more policies that specifically apply to America.

Water Quality

Water is inherently one of the most important natural resources for survival on Earth. The United States' food supply, economy, and quality of health is built on ensuring clean and available water to its citizens. However, with issues such as agricultural runoff and pollution becoming more prevalent in recent decades, the United States needs to take strides to ensure water quality.[1]

> "A water market would bring the private sector to the table on directly preserving and enhancing water quality."

The issue of agricultural runoff is a complicated one with many players involved; for example, erosion from a farm in Iowa flows down the Mississippi where it reaches the Gulf of Mexico, crossing several states. It's only until this waste reaches the Gulf of Mexico that it starts to take effect in the form of the Dead Zone, a 7,000 square mile area of ocean with hypoxic water which cannot sustain aquatic life.[2] With water being a state by state issue, water pollution across states makes this a challenge. To even begin to address this problem first requires a federal framework that enables and encourages cooperation between the multitude of state and local governments involved. An example of this is the Water Framework Directive by the European Union, introduced in 2000, which establishes "overall principles...for control on abstraction and impoundment in order to ensure environmental sustainability of affected water systems."[3] Since the 27 EU member states are affected by nitrate across 20% of their total groundwater body area, and considering the geographic interconnectedness between the countries, the European Commission tracks and encourages discussion over water quality between constituents.[4] What would such a program look like in the United States? One possibility is a federal commission that coordinates between state governments to find solutions to water quality problems. For instance, Louisiana, which suffers the consequences of poor irrigation, could lobby through the commission to have action done in Iowa to stop the pollution.

Beyond this national network of coordinating water policy across states, either implementing a nationwide or promoting state expansion of water market systems would help preserve water quality. A water market establishes property values over certain bodies or other areas, giving owners an incentive to privately ensure the environmental standards of these waters.[5] Water rights could be traded in times of shortages to incent farmers to not partake in risky

1 Carleton University (2019). The Gulf of Mexico Dead Zone. https://serc.carleton.edu/microbelife/topics/deadzone/index.html
2 ibid.
3 European Parliament and Council (2000). Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy.
4 European Environmental Agency (2019). European Waters -- Assessment of Status and Pressures 2018. https://www.eea.europa.eu/publications/state-of-water
5 Hanak, Ellen, et al. (2019). California's Water Market. https://www.ppic.org/publication/californias-water-market/

agricultural strategies which lead to increased runoff in water. Furthermore, considering the growing threat of saline or polluted water, a water market provides a stage by which the resource of water can be traded fairly without resulting in conflict. Such a system has been considered and near-implemented in California in light of extensive droughts, and a water market could make sense in agricultural states where water has been negatively affected by pollution.[6] Oregon's Water Trust exemplifies another trait of water markets: an increased value of information.[7] Commoditising the value of water in this way means that consumers give more consideration to how the water is utilized, thus driving consumers away from water-intensive measures, products, and agriculture that ultimately harms the environment.

There are certain necessary considerations before adopting a water market, however. Water rights need fundamental changes before a full rollout in the economy. The obvious issue is that unlike land, water is a variable resource dependent on the season.[8] A water market supply is highly susceptible to shocks via droughts, which, if a water market grows large enough, could cripple the nation's economy. Development of a water market would have to correspond with increased storage of water by consumers in case of a drought, which in turn would be incentivised by the increased value of water. One of these holes is the *Use It or Lose It* clause, which encourages wasting water in order to protect a farm's water rights for the next year, similar to how companies that cut budgets based on previous year spending see tremendous waste of company funds as departments overspend to receive the same amount the following year. This would directly contradict the entire purpose of water rights: to increase the value of water so it isn't wasted. Another area of waste is *No Injury* rules, which require a regulatory commission to survey the transfer of water rights. While in theory this prevents parties in the deal from being critically harmed by a shock, this also means millions of dollars more in transaction costs, which could deter small businesses in the water market. For the moment, however, a water market would bring the private sector to the table on directly preserving and enhancing water quality.

Federal Land Leases to Private Conservationists

In order to protect natural wildlife from pollution and disturbances due to resource extraction, in a free market, environmentalists should have the right to purchase the land itself like any business. However, due to irregularities in the US legal code, environmental groups and the government are in a tit-for-tat zero-sum war over land.

For one, any US citizen can make a bid and purchase a plot of federal land for their usage.[9] The kicker comes from the fact that federal and state rules often require landowners to either extract or develop the resources on their territory and send it to market. This

6 Wertheimer, Linda (2015). Why Water Markets Might Work In California. https://www.npr.org/2015/04/18/400573611/a-water-markets-might-work-in-california

7 Barter, Caylin, et al. (2017). Understanding Water Rights in Oregon: A Guide to Land Rights. https://oregonlandtrusts.org/wp-content/uploads/2019/04/COLT-water-law-primer-final-draft-August-14-2017.pdf

8 Libecap, Gary D. (2008). The State of Water Rights and Western U.S. Water Markets. https://www.hillsdale.edu/educational-outreach/free-market-forum/2008-archive/the-state-of-water-rights-and-western-u-s-water-markets/

9 Regan, Shawn (2019). Why Don't Environmentalists Just Buy the Land They Want To Protect? Because It's Against the Rules. https://reason.com/2019/11/18/why-dont-environmentalists-

effectively only allows for mining and ranching to be carried out on these leased properties. While National Parks are areas designated by law as no-extraction zones, the government has effectively squeezed businesses out of the opportunity to own land and create similar nature reserves. For the sake of market freedom, but also for the conservation of our natural heritage, the government needs to take a step back, loosen its burdensome restrictions on private conservation, and allow areas designated for extraction to be opened up also to conservation. For instance, though the Endangered Species Act's (ESA) intention was to concentrate populations of the endangered animals on public land, the consequence of this legislation is that private landowners who have such species living on their property are fined and punished, even if they did not intend for the animals to be there.[10] As might be predicted, this led to a decline in endangered species on private lands as owners were willing to forcibly remove the at-risk animals - a consequence which is diametrically opposed to the bill's stated intention of protecting these very species. In addition, the ESA has struggled to actually help plant and animal species recover from being endangered. In the nearly 50 years since the ESA was passed, only 40 of the over 2,000 listed species[11] have been delisted due to "recovery" -- 18 of which were mistakenly listed as endangered to begin with.[12] As a result, burdensome regulations and billions[13] of dollars spent on failed recovery attempts make it hard for critics to justify the law.

Instead of prohibiting private involvement in land conservation rights, this area of law should be expanded to include businesses in the opportunity cost decision-making towards the environment.[14] While there is infrastructure within the public sector to establish conservation (similar to issues of pollution), preserving all of the land within the United States is both a public *and* private endeavour - leaning more so towards the latter considering that private citizens and businesses hold 60.2% of all land in the country.[15] The government needs to end its exorbitant burdens on private organizations purchasing land, instead allowing private owners to uphold their property rights and preserve their land. Part of the issue is that when conservationists make bids on federal lands, "there are no fees to submit a nomination and they can be made anonymously, often leaving the agencies with little knowledge about who is proposing a lease."[16] This blind spot in the legislation influenced politicians from

just-buy-the-land-they-want-to-protect-because-its-against-the-rules/

10 McArdle, Megan (2014). How Property Rights Could Help Save the Environment. https://www.theatlantic.com/business/archive/2012/05/how-property-rights-could-help-save-the-environment/257756/

11 U.S. Fish and Wildlife Service (2020). Listed Species Summary (Boxscore). ecos.fws.gov/ecp0/reports/box-score-report

12 Gordon, Robert (2019). Correcting Falsely 'Recovered' and Wrongly Listed Species and Increasing Accountability and Transparency in the Endangered Species Program. https://www.heritage.org/environment/report/correcting-falsely-recovered-and-wrongly-listed-species-and-increasing

13 U.S. Fish and Wildlife Service (2016). FEDERAL AND STATE ENDANGERED AND THREATENED SPECIES EXPENDITURES.

14 The Environmental Literacy Council (2015). Property Rights. https://enviroliteracy.org/environment-society/environmental-resource-economics/property-rights/

15 Summit Post (1991). Public and Private Land Percentages by US States. https://www.summitpost.org/public-and-private-land-percentages-by-us-states/186111.

16 Rothberg, Daniel (2019). Facing Public Outcry, Forest Service Denies Oil and Gas Leases in the Ruby Mountains. https://thenevadaindependent.com/article/facing-public-outcry-forest-service-denies-oil-and-gas-leases-in-the-ruby-mountains

Nevada to deny hundreds of conservationists' claims in the Ruby Mountains. Regulations requiring owners to extract resources should also be modified to allow for usage of land for conservation purposes. Completing these steps could help preserve land beyond the national parks for decades to come.

Scaling Back Energy Subsidies

Through market mechanisms, energy markets are adjusting to external costs from pollution, global warming, and environmental consequences of human behaviour. With green energy sources becoming more popular and already reaching price parity with traditional energy sources, there are government activities which are impeding not only the transition to green energy, but also the mechanisms of the market itself.

> "Texas is an example of how energy markets can work efficiently and effectively. If Texas were a country, it would be the fifth largest producer of wind energy in the world."

The most significant of these are government subsidies to the fossil fuel industry. Naturally, as many consumers in the marketplace prefer green energy as the reliable fuel source of the 21st century, the demand for these goods will become more widespread, bringing down their price as businesses rush in to match demand. Likewise, this will cause a decrease in demand for the already declining fossil fuel industry, which currently produces about 35 gigatonnes of carbon dioxide each year around the world.[17] What prevents these market mechanisms from occurring is the government propping up uncompetitive energy businesses with taxpayer subsidies. Taxpayers lose approximately $1 billion a year to coal businesses who use their resources to lobby the government for more funding instead of using the additional funds to revive their industry through innovation.[18] Government subsidies aren't limited to big coal; over the summer of 2019, the Ohio State Legislature redirected funds away from a Clean Air Initiative intended to wean consumers off fossil fuels towards bailing out FirstEnergy Solutions, costing businesses alone an extra $20 on their energy bills each month.[19] These subsidies are just passing the costs of a large business' failure onto smaller businesses and consumers.

By scaling back energy subsidies for non-breakthrough technologies, the market will be allowed to function more properly, taxpayers will save billions, truly competitive energy sources will replace artificially competitive sources, and American innovation will be allowed to flourish.

17 Carrington, Damian (2019). Fossil Fuel Production on Track for Double the Safe Climate Limit. https://www.theguardian.com/environment/2019/nov/20/fossil-fuel-production-on-track-for-double-the-safe-climate-limit

18 Daniel, Joseph (2019). The Billion-Dollar Coal Bailout Nobody Is Talking About: Self-Committing In Power Markets. https://blog.ucsusa.org/joseph-daniel/billion-dollar-coal-bailout-nobody-is-talking-about

19 Evans, Ganon (2019). Ohio's Nonsensical Nuclear Bailout Moves Forward. https://www.cagw.org/thewastewatcher/ohios-nonsensical-nuclear-bailout-moves-forward

Opening Energy Markets

The energy sector in the United States is profoundly outdated. Between heavy regulations and all-powerful utility companies, it is hard for the market to function and provide choices for energy consumers. Not only do the government and the utilities wield lots of power over the energy sector, but they also don't use that power to achieve positive environmental outcomes. The New York State Legislature, for example, has blocked attempts to allow hydraulic fracturing and new natural gas pipelines for years. These blocks have been causing challenges on Long Island, where energy consumers rely on natural gas to keep the lights on. The utility has expressed the need for a new pipeline in order to bring new Long Island energy consumers back on-line.[20] Subsequently, the state strong-armed the company into bringing the consumers on-line and providing natural gas without the pipeline, and then fined them $36 million.[21] With few reliable domestic options, this natural gas could end up coming from places like Russia and Qatar, with their concomitant lower environmental standards. Situations like this wouldn't occur if both the utilities and the state didn't have the immense control over energy markets that they currently have.

> "The government needs to end its exorbitant burdens on private organisations purchasing land, instead allowing private owners to uphold their property rights and preserve their land."

Texas is an example of how energy markets can work efficiently and effectively. The Lone Star State has always been an energy giant. Most would associate the words 'oil' and 'Texas' with each other due to its long history of being a massive oil producer. Following a 2002 decision to deregulate their energy markets, the energy market is even stronger and cleaner energy is quickly on the rise, particularly in the areas of wind and natural gas.[22] In fact, Texas produces more wind and natural gas than any other state in the country and they are closing coal-fired power plants at record rates.[23] If Texas were a country, it would be the fifth largest producer of wind energy in the world.

Unlike mandate-heavy states like California and New York, Texas has also managed to keep energy costs down. In the summer of 2019, Texas residential energy consumers were paying 10% less than the national average and industrial energy consumers were paying 22% less than the national average.[24] Compare this to California, a state traditionally hailed as a

20 French, Marie J. (2019). POLITICO New York: National Grid Agrees to Lift Gas Moratorium, Pay $36M Penalty. https://subscriber.politicopro.com/article/2019/11/national-grid-agrees-to-lift-gas-moratorium-pay-36m-penalty-1830742
21 ibid.
22 Lindquist, Nick (2019). Deregulated Energy Markets Made Texas a Clean Energy Giant. https://thehill.com/opinion/energy-environment/457353-deregulated-energy-markets-made-texas-a-clean-energy-giant
23 ibid.
24 ibid.

clean energy success story, whose residential energy consumers were paying 56% above the national average and industrial energy consumers were paying about 76% above the national average.

What exactly changed in 2002 to cause this? One major change was the expansion of consumer choice in the energy market. In Texas, 92% of energy consumers are free to choose where their energy comes from, giving power to both the consumer and the producer rather than the utilities or the state. In other words, clean energy is on the rise because investors and energy consumers are choosing clean energy over coal and other traditional energy sources in an open market setting.

No model is perfect. Texas still has renewable portfolio standards as well as energy subsidies. But so does California. The difference between the two is the way the energy markets are set up in each of the states. Texas' open market system has allowed clean energy to boom without massive spikes in energy costs. If more states were to follow the lead of Texas, we would see a large expansion in clean energy production and a steep decline in cost for these energies as well (as discussed extensively in chapter 11).

National Parks Deferred Maintenance

In March of 1872, Congress created Yellowstone National Park as the country's - and the world's - first National Park. Yellowstone and all 62 national parks that followed were created for the "benefit and enjoyment of the people," and for the protection of wilderness and wildlife from commercial interest. The National Parks are important to American conservation because they protect endangered species, preserve wilderness areas, and provide unique outdoor laboratories for scientific discovery. Although this aspect was not considered when national parks were established, they have become essential to understanding climate change and its impact, as well as for other important scientific discoveries. The parks also generate a sizeable contribution to the US economy. This contribution is estimated to be approximately $40 billion per year and largely benefits local tourism-reliant communities surrounding the parks. In recent years, however, the National Park Service (NPS) has suffered from a backlog of $11.92 billion in deferred maintenance - creating difficulty for the Service to address the challenges of aging infrastructure and an increased number of visitors.[25] Unless it is addressed, the scope of the deferred maintenance backlog will continue to undermine the National Parks Service's ability to fulfil its role in preserving the legacy of public lands and providing a world-class visitor experience.

"Unless it is addressed, the scope of the deferred maintenance backlog will continue to continually undermine the National Parks Service's ability to fulfil its role in preserving the legacy of public lands."

25 Argust, Marcia (2019). Cost of Unaddressed National Park Repairs Grows to Nearly $12 Billion. www.pewtrusts.org/en/research-and-analysis/articles/2019/04/09/cost-of-unaddressed-

In 2018, the NPS spent approximately $671 million in an attempt to address deferred maintenance needs. Despite this expenditure, the backlog increased by approximately $313 million or 2.7%.[26] The severity of the backlog has caught the attention of several US lawmakers, as it prevents the parks from repairing $6.15 billion of paved roads and parking structures and $5.77 billion of other campgrounds and water system facilities. In addition, a National Academy of Science's study suggests that 2 to 4% of the replacement value of any constructed asset should be invested yearly in maintenance to keep assets in good condition. Currently, the Department of the Interior (DOI) and the NPS are able to invest less than 0.5% for maintenance purposes.

In January 2019, Members of Congress introduced the House and Senate versions of the Restore Our Parks and Public Lands Acts.[27] Each bill seeks to address the maintenance backlog by funneling 50% of the revenue from all oil, gas, coal, and alternative or renewable energy development on federal land and water to the NPS and Public Lands Legacy Restoration Fund. Each bill would operate over a five-year period and will raise approximately $6.5 billion for the Fund.

Under the Federal Lands Recreation Enhancement Act (FLREA) of 2005, the NPS was able to enact a policy that requires those parks that collect fees to direct 55% of that revenue to deferred maintenance projects.[28] FLREA, and the NPS ability to direct fee revenue towards these projects, however, is set to expire in 2020. The Department of the Interior has thus suggested that the sunset period for FLREA is extended beyond 2020, as the revenue raised from the fees is an important source of funding. Making FLREA permanent may be an appropriate long-term approach to future maintenance needs, while also helping address the current backlog issues, by allowing individual parks to enjoy the flexibility of using revenue in ways most beneficial to the park.

Conclusion

By transforming the dated water rules to establish an open water market, landowners will not only be able to purchase and sell water rights, but also be encouraged to conserve water instead of being encouraged to overuse to meet a water rights quota. Opening federal land leases to private conservationists would maintain federal land revenues while also allowing private industry to conserve land and wildlife with private funds. Scaling back energy subsidies would save the taxpayers billions while also promoting true market competition, passing on the savings to energy consumers and allowing clean energy sources a chance to compete with traditional energy sources. Opening energy markets would further reinforce market competition and expand clean energy usage, just as it has in states such as Texas. National Parks are in desperate need of repair and by breaking the current backlog through energy revenues and encouraging more localised management decisions, the problems can be corrected permanently and with minimal tax burden.

national-park-repairs-grows-to-nearly-12-billion

26 ibid.

27 Senate - Energy and Natural Resources (2019). S.500 - 116th Congress (2019-2020): Restore Our Parks Act. www.congress.gov/bill/116th-congress/senate-bill/500

28 Repanshek, Kurt (2019). National Park Service Given More Leeway On Spending FLREA Revenues. https://www.nationalparkstraveler.org/2019/05/national-park-service-given-more-leeway-spending-flrea-revenues

The United States will go down in history as one of the most innovative nations in the world. The list of modern-day technological advancements that were born in the United States extends far and the world wouldn't be the same without them. America was also built on the principles of free enterprise, individual liberties, and strong property rights. Today, the US has opportunities in the environmental space to expand on all of these principles and achieve cleaner environmental outcomes in the process.

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13. United Kingdom: A Market Environmentalist Vision for Britain

Barney Trimble, Jon Entine, Connor Axiotes & Eamonn Ives

Brexit is an unparalleled opportunity for the United Kingdom to become a world leader in market environmentalism.

The United Kingdom finds itself in a unique political situation in its history. With a near-unprecedented Conservative majority in the House of Commons and a major constitutional shift in the form of its departure from the European Union, the UK is now at the dawn of a new political era. It must use this historic opportunity in an environmentally responsible and pioneering manner.

Having already been the first major economy in the world to legally commit to a 'net zero by 2050' target, much more must and can be done. This book has already extolled the virtues of clean free market policy, property rights, and localism - and it is clear that, if the UK were to integrate these principles into its environmental platform, it would become a world leader in clean technology innovation and market environmentalism.

However, as opposed to the other countries analysed in this book, Brexit does in fact offer an unprecedented and unrivalled opportunity to do more, faster. The intention of this chapter is therefore to outline some of the ways in which the United Kingdom can use Brexit as a lynchpin for cleaner free trade, more innovation-friendly regulation, and unleashing a technological revolution in areas such as biotechnology and artificial intelligence. Moreover, it will also consider some longer-standing aspects of environmental policy in Britain, such as green belts, and put forward sensible, pro-market policy tweaks that the Conservative government might implement to make the United Kingdom a fairer, greener, and cleaner country.

Clean Free Trade after Brexit

This part was written by Barney Trimble.

> "First on the agenda should be taking part in the negotiations for the Agreement on Climate Change, Trade and Sustainability (ACCTS)"

After Brexit, the United Kingdom will no longer be beholden to the European Union's trade agreements and restrictions. This presents a truly golden opportunity for Britain to become a global leader on clean free trade and the sharing of innovative technology around the world.

In terms of enforcing positive environmental change, the UK must aim to set the global standard. With Brexit, it is now perfectly placed to do so. While many of the deals agreed under the umbrella of the EU will be rolled over initially, the trade-based rationale of Brexit was to make agreements that were more in tune with British needs, capabilities, and ideals. These can incorporate a more open approach than the EU, but it can also set more ambitious and intelligent environmental goals.

First on the agenda should be taking part in the negotiations for the Agreement on Climate Change, Trade and Sustainability (ACCTS), as already outlined in chapter 11. Were the UK to join at an early stage, the agreement would benefit in terms of awareness and geopolitical influence from having a major economy on board. Meanwhile, the UK would be able to take a substantial role in shaping the final agreement, while giving a public demonstration of our nation's commitment to tackling climate change and the methods we will be championing.

All of the goals of ACCTS (see chapter 11) are built on the joint principles of free trade and environmental protection. They show that the way to combat climate change and environmental degradation is not through de-growth; it is through the mechanisms that have enriched so much of the world over the past half-century. If widely adopted, they have the potential to do much good.

However, regardless of how successful it proves to be, ACCTS should not be the UK government's only environmental trade commitment. ACCTS has the potential to create a greener trading environment, but there will remain individual cases that the UK government should examine.

For example, take the EU's banning of palm oil in biofuels. In theory, it is a piece of green legislation, passed to reduce deforestation caused by palm oil production; in practice, it is a protectionist act supported by European biofuel producers keen to reduce competition. Yet, the ban is likely to do more harm than good on an environmental level. By cutting the trade link, the EU is surrendering its influence over palm oil producers. Meanwhile, less environmentally conscious markets such as India and China will ensure that palm oil production continues at high levels.

The UK's response should be to allow the use of palm oil in biofuels, but only that which has been certified by the Roundtable on Sustainable Palm Oil (RSPO). The RSPO criteria forbid the clearing of primary forests or areas with significant concentrations of biodiversity, as well as requiring a reduction in pesticide use.[1] This act would increase the value of sustainably produced palm oil, creating a greater drive for farmers to be RSPO certified, ultimately reducing the amount of deforestation caused by palm oil production.

By remaining a stakeholder, the UK would retain the ability to lobby for more stringent legislation to be put in place. If the UK is alone, it will have limited sway. For British influence to be as effective as possible, it must establish itself as a champion of both free trade and the environment. To do so, it can look to follow the example of the five nations setting up ACCTS. The scope of ACCTS is far larger than any of them could hope to achieve alone, but by working together they are able to encourage other larger nations to follow.

> "For British influence to be as effective as possible, it must establish itself as a champion of both free trade and the environment."

Deforestation caused by palm oil is just one of a myriad of problems to be tackled. However, it demonstrates the value in engaging with these issues more carefully. By taking a free trade approach, the UK can look to tackle similar issues across the world. In doing so, British trade agreements can help countries protect the environment, all the while seeing their economic development continue.

1 RSPO (2018). Principles and Criteria for the Production of Sustainable Palm Oil. https://rspo.org/library/lib_files/preview/842

Another example of free trade agreements and the environment being able to work together harmoniously was the signing of the Trade Act of 2002. As exemplified by some of the free trade agreements pursued under this framework, President George W. Bush recognised that advancing free trade and protecting the environment were mutually supportive. These included comprehensive bilateral environmental provisions that are legally binding. In connection with the proposed Peru FTA, for example, the US agreed to work with the government of Peru to address illegal logging (specifically mahogany) and restrict trade in endangered species.[2] The US has also used this framework to uphold and recommit to many previous successful conventions including: Convention on International Trade in Endangered Species, Montreal Protocol on Ozone Depleting Substances, and the Ramsar Convention on Wetlands. Similar trade agreements with Panama[3], South Korea[4] and Colombia[5] were put in place.

> "Pro-environmental agreements, from cleaner air and water standards to the sound management of chemicals, exist between the US and Singapore, Southeast Asia, Canada, and Mexico."

Moreover, separate environmental cooperation mechanisms were negotiated along with the provisions of committing the United States and its partners to implement cooperative environmental activities. In the instance of Chile, the US National Oceanic and Atmospheric Administration works with the Latin American country to promote best practices in establishing and managing Marine Protected Areas, Yosemite and Torre del Paine National Parks have entered a Sister Parks Partnership that expands cooperation in improving park management, and the US Environmental Law Institute has trained judges from Chile in the fundamentals of environmental law. Similar agreements, from cleaner air and water standards to the sound management of chemicals, exist between the US and Singapore, Southeast Asia, Canada, and Mexico.

With the UK on board, frameworks such as ACCTS, as well as bilateral trade clauses for environmental cooperation, must be expanded and can serve as examples of how to form a successful and effective free trade agreement that both supports free trade and protects the environment. Brexit is the ideal opportunity for the United Kingdom to forge a path forward on clean free trade.

2 Villarreal, Angeles M. (2007). U.S.-Peru Economic Relations and the U.S.-Peru Trade Promotion Agreement. https://fas.org/sgp/crs/row/RL34108.pdf

3 Hornbeck, J.F. (2012). The U.S. - Panama Free Trade Agreement. https://fas.org/sgp/crs/row/RL32540.pdf

4 U.S. International Trade Commission (2007). U.S. - Korea Free Trade Agreement: Potential Economy-wide and Selected Sectoral Effects. https://www.usitc.gov/publications/pub3949.pdf

5 U.S. international Trade Commission (2007). U.S. - Colombia Trade Promotion Agreement: Potential Economy-wide and Selected Sectoral Effects. https://www.usitc.gov/publications/332/pub3896.pdf

Biotechnology Meets Brexit

This part was written by Jon Entine.

When it comes to technology, identifying the right path forward can be challenging; the consequences, if leaders wager on the wrong horse, can be catastrophic. Yet it happens all the time.

We are in the early stages of a once-in-a-generation - maybe once-in-a-century - biotechnology innovation earthquake that is revolutionizing medicine, perhaps leading to the elimination of many genetic diseases, and making food safer, more nutritious, and more abundant.

But not everyone recognises when the winds of innovation gain strength, and some, like the Luddites of early 19th century Britain, wilfully react against it. While many of the concerns expressed by the technophobic Luddites were legitimate, including the disruption of pastoral English life and rough and rapid urbanisation, there was little attempt to balance the problems against the many benefits eventually ushered in by the industrial revolution.

Which raises the question: with sustainable and climate-resistant farming a very achievable goal within the 21st century, will Britain choose progress? There are historic roadblocks to innovation, and often a sizeable gap between the risks that visionary innovators champion versus the risks the public (and worse, politicians) are willing to embrace.

Consider a Western Union internal memo, dated 1876: "This 'telephone' has too many shortcomings to be seriously considered as a means of communication [and] is inherently of no value to us."[6]

Or a comment by a British MP in 1903: "I do not believe the introduction of motor-cars will ever affect the riding of horses."[7]

Or the infamously flip quip by an executive editor at Prentice-Hall in 1957: "I have talked with the best people and I can assure you that data processing is a fad that won't last out the year."[8]

They certainly missed the early signs of an innovation revolution. Which brings us, chronologically, to a 2018 statement by Greenpeace-UK, targeting the world's most transformative emerging technology, the CRISPR gene editing of crops: "Europe is allowing potential contamination of the environment and the food chain by these experimental GMOs, undermining farmers, retailers, and consumers."[9]

6 Wadwha, Vivek (2014). Why We Should Believe the Dreamers and Not the Experts. https://www.washingtonpost.com/news/innovations/wp/2014/07/31/why-we-should-believe-the-dreamers-and-not-the-experts/

7 Wulfen, Gijis van (2016). 10 Great Ideas That Were Originally Rejected. https://www.innovationexcellence.com/blog/2016/12/19/10-great-ideas-that-were-originally-rejected/

8 Sherman, Richard J. (2012). Supply Chain Transformation: Practical Roadmap to Best Practice Results. Hoboken: John Wiley & Sons.

9 Greenpeace European Unit (2018). News Release, 24 July 2018. https://www.greenpeace.org/eu-unit/issues/nature-food/1260/unauthorised-gmo-field-trial-exposed-as-eu-takes-hands-off-

Through the backwards lens of history, the first three comments reflected the mainstream wisdom of their eras, as many people simply failed to grasp the transformative power of technological innovation. Now they just seem almost tragi-comically ignorant. Sooner rather than later, Greenpeace's pronouncement will be viewed with equal disdain.

It's desultory enough to see this simplistic criticism associated with an influential environmental organisation; what makes this kind of statement so telling is that its perspective is mainstream among many 'progressive' groups throughout Europe, North America and elsewhere. This technological pessimism also is reflected in the tone and substance of mainstream media reporting of modern agriculture. The belief that biotechnology poses more dangers than life-benefitting innovation has become a central meme parroted by environmental groups across Europe and championed by politicians whose grasp of science is no better than the technophobes in the United States in the 1870s or the Luddites in England.

> "Biotechnology is shaping up as the fundamental motive force and building block of the 2020s."

Biotechnology is shaping up as the fundamental motive force and building block of the 2020s. CRISPR and other gene-editing techniques are poised to revolutionise health care, with new treatments and cures. But the more immediate impact, especially in the context of this book, is on food and farming, as gene editing is already ushering in a new era of sustainable agriculture.

"Contrary to widespread consumer belief," writes plant pathologist Dr. Steve Savage, "organic farming is not the best way to farm from an environmental point of view. There are now several cutting-edge agricultural practices which are good for the environment, but difficult or impossible for organic farmers to implement within the constraints of their pre-scientific rules."[10]

Among new breeding biotechnologies with environmentally beneficial innovations:

- GMO crops designed to be grown without tilling, which dramatically limits the release of carbon pollution from soil[11]
- Genetically engineered insect and disease-resistant crops, from cotton and soybeans to eggplant and papaya, repel pests using natural bacterium, which results in as much as a 90% reduction in chemical usage when weighted by environmental impact[12]

approach-greenpeace

10 Savage, Steve (2013). Six Reasons Organic is NOT The Most Environmentally Friendly Way To Farm. https://appliedmythology.blogspot.com/2013/04/six-reasons-organic-is-not-most.html

11 Entine, Jon & Rebecca Randall (2017). GMO sustainability advantage? Glyphosate spurs no-till farming, preserving soil carbon. https://geneticliteracyproject.org/2017/05/05/gmo-sustainability-advantage-glyphosate-sparks-no-till-farming-preserving-soil-carbon/

12 Perry, Edward D. (2016). "Genetically engineered crops and pesticide use in U.S. maize and soybeans." In Science Advances 2, no. 8, https://advances.sciencemag.org/content/2/8/e1600850

- GMO and gene-edited plant-based foods, such as the Impossible Burger (also Impossible Pork, Fish, etc.) use up to 87% less water, 96% less land, resulting in 89% fewer GHG emissions, and emit 92% less dead zone-creating nutrient pollution than ground beef from cows[13]

- CRISPR-engineered plants with climate-adaptive traits, such as heat tolerance,[14] drought tolerance,[15] and salt tolerance[16]

- Gene editing hardier produce-staples that last longer on shelves[17] and can defend themselves from pathogens[18] so that more food makes it from farm to plate, limiting wastage

- CRISPR-engineered staple crops produce less methane, cattle feed that is easier to digest and can help make crops fix more carbon directly[19]

- Gene edited plants that enhance nutrition, such as Calyxt soybeans that are locally grown and engineered to produce a "high oleic" oil with no trans fats and less saturated fat[20]

- CRISPR-engineered staple crops produce less methane, cattle feed that is easier to digest, and can help make crops fix more carbon directly.[21]

> "If the UK chooses to use Brexit to encourage more innovation-anticipating biotechnology regulation, Britain could emerge as a global genetic research and product development powerhouse."

This is a non-exhaustive list of the myriad sustainability benefits presented to us by biotechnological progress. But before we can fully harvest the CRISPR revolution and move literally thousands of products from labs to farms to tables, the countries of the world need to resolve how they will oversee gene-engineered crops and harmonise regulations to encourage trade and innovation. This is a divisive

13 Impossible Foods (2019). Impossible Burger Impact Report 2019. https://impossiblefoods.com/mission/2019impact/
14 Yu, Wenquing et al. (2019). "Knockout of SlMAPK3 enhances tolerance to heat stress involving ROS homeostasis in tomato plants." In BMC Plant Biology 19, no. 354.
15 Shi, J. et al. (2017). "ARGOS8 variants generated by CRISPR□Cas9 improve maize grain yield under field drought stress conditions." In Plant Biotechnol J. 15, no. 2, 207-216.
16 Farhat, Sufia et al. (2019). "CRISPR-cas 9 directed genome engineering for enhancing salt stress tolerance in rice." In Seminars in Cell & Developmental Biology 96, 91-99.
17 Cremer, Justin (2019). Can these apples change the GMO conversation? https://allianceforscience.cornell.edu/blog/2019/04/can-apples-change-gmo-conversation/
18 Chandrasekaran, J. et al. (2016). "Development of broad virus resistance in non□transgenic cucumber using CRISPR/Cas9 technology." In Molecular Plant Pathology, 17, no. 7, 1140-1153.
19 Calyxt (2020). Calyno™ High Oleic Soybean Oil. https://calyxt.com/products/high-oleic-soybean-oil
20 Miller, Lisa & Abdul Latif Jameel (2020). Making real a biotechnology dream: nitrogen-fixing cereal crops. http://news.mit.edu/2020/making-real-biotechnology-dream-nitrogen-fixing-cereal-crops-0110
21 ibid.

issue, often pitting suspicious, risk-averse advocacy groups against the mainstream science community, which sees opportunities and only minimal potential risks in the incipient biotechnology revolution.

Which countries are the innovators in these precautionary-obsessed times? China is placing a huge bet that CRISPR is the key to feeding an increasingly affluent 1.4 billion population with limited resources. Today, China publishes twice as many CRISPR-related agricultural papers as the second-place country, the United States.[22]

Nonetheless, the US remains a global magnet for agricultural biotechnology investment, and most of the biotechnology innovators have a major presence in North America. As a consequence, scientists in industry and academia are developing hundreds of new products, from pesticide-reducing herbicides and nutrition-enhanced staples to plant-based meats and fish. The CRISPR food revolution also is being fervently embraced in Brazil, Argentina and Japan.

> "The EU is losing its competitive edge in sustainable food production."

The real shocker are the countries in the innovation basement: the member states of the European Union, especially. In the early 2000s, with public opinion on GMOs hijacked by anti-technology 'greens', politicians steam-rolled the EU's science community, which at the time was on the cusp of establishing Europe as the global biotechnology epicentre, leading to the passage of legislation that effectively gutted agro-biotechnology in the region.[23]

In the decades since, the EU has acquiesced to the precautionary principle-inspired lobbying, backpedalling on agricultural innovation. As a result, Europe is not sharing in the biotech-inspired agricultural boom sweeping through much of North and South America. Europe only has a few genetically engineered crops authorised for cultivation and a very cumbersome process for importing GE crops, used mostly for animal feed, from other countries.[24]

The CRISPR crop gene-editing revolution is offering Europe a chance to rewrite its scientifically regressive script, but so far remains a global laggard. In July 2018, the European Court of Justice drew on legislation passed in 2001 to oversee transgenic crops, decided that gene-edited plants should be regulated the same way as GMOs, rendering them effectively illegal.[25] Leaders of 117 prominent EU research facilities are campaigning to reverse EU policy, but have made little headway.[26]

22 Cohen, Jon (2019). To feed its 1.4 billion, China bets big on genome editing of crops. https://www.sciencemag.org/news/2019/07/feed-its-14-billion-china-bets-big-genome-editing-crops
23 Genetic Literacy Project (2020). Global Gene Editing Regulation Tracker. https://crispr-gene-editing-regs-tracker.geneticliteracyproject.org
24 Library of Congress (2015). Restrictions on Genetically Modified Organisms: European Union. https://www.loc.gov/law/help/restrictions-on-gmos/eu.php
25 Daley, Jason (2018). Europe Applies Strict Regulations to CRISPR Crops. https://www.smithsonianmag.com/smart-news/europe-applies-strict-regulations-gene-edited-crops-180969774/
26 Max-Planck-Gesellschaft (2019). Scientists call for modernizing of EU gene-editing legislation.

As a result, the EU is losing its competitive edge in sustainable food production, with EU farming innovation now treading water with the likes of Mexico and Ukraine.

One ray of hope in Europe is Britain. With a new government steering Britain's exit from the European Union, the UK could regain full control over its regulations, including in agriculture. That might open the door to a reversal of what scientists consider the EU's regressive biotechnology policies.

How might that play out? Despite growing political rhetoric emanating from anti-biotechnology NGOs, there is no scientific evidence to support allegations that GMOs or gene-edited crops are risky environmentalist bets. Just the opposite. And UK politicians are in the unique position of being able to jump off the precautionary-defined European treadmill and transform Britain into one of the global food and farming innovation hubs.

A first step would be to replace precautionary-obsessed scepticism about genetic engineering with an evidence-based perspective. If the UK chooses to use Brexit to encourage more innovation-anticipating biotechnology regulation, Britain could emerge as a global genetic research and product development powerhouse. And flexible regulations that incorporate ethical perspectives could attract sizeable new investments, stimulating wide-reaching research, and establishing the country as a true biotechnology trendsetter. Most importantly, from the perspective of this book, it will be good for the planet too.

"With a new government steering Britain's exit from the European Union, the UK could regain full control over its regulations."

Unleashing Artificial Intelligence for the Environment

This part was written by Connor Axiotes.

The essence of market environmentalism is that a strong, growing economy provides the world with the discovery of new resources that can endow us with the capacity to better fight climate change. With more effective and innovative technology, which a stronger economy can more readily fund intensive research for, we may soon possess the tools to help win the battle against continued environmental degradation. AI, and in particular Machine Learning (ML), has the potential to provide us with such technological options to help remedy climate

https://www.mpg.de/13761643/scientists-call-for-modernization-of-the-european-genetic-engineering-law

change. Be it through more advanced and effective climate modelling or through computer simulations to help people plan for certain adverse weather occurrences, artificial intelligence is the next step in the technological response to climate change.

A recent paper by 23 of the world's brightest minds in AI and climate-remedying technological innovation, from Harvard University to DeepMind and Google AI, published a fascinating paper in 2019, wherein they describe how "ML can be a powerful tool in reducing greenhouse gas emissions and helping society adapt to a changing climate."[27] In particular, ML can:

"Enable automatic monitoring through remote sensing (e.g. by pinpointing deforestation, gathering data on buildings, and assessing damage after disasters). It can accelerate the process of scientific discovery (e.g. by suggesting new materials for batteries, construction and carbon capture). ML can optimise systems to improve efficiency (e.g. by consolidating freight, designing carbon markets, and reducing food waste). And it can accelerate computationally expensive physical simulations through hybrid modelling (e.g. climate models and energy scheduling models)."[28]

With the European Commission's Ursula von der Leyen promising extensive AI regulation in her first 100 days,[29] past experience of excessive government regulation suggests that it will hinder rather than help the creation of transformative AI technologies to help remedy climate change. However, with the European Union moving in one direction, the United Kingdom now has the opportunity to move in another. The UK should use Brexit to decouple from the one-size-fits-all technology regulatory frameworks the EU seems intent on (more on this in Chapter 14).

> "AI, and in particular Machine Learning, has the potential to provide us with the technological options to help remedy climate change."

The UK is one of a handful of world leaders in AI, and with the right market-based policies could soon vastly outpace the lumbersome EU in this field.[30] Policies such as permissionless innovation[31] will allow for that same technological boom seen in the early 2000s. This time around, such innovation should be directed towards solving climate change, and the government must facilitate this. Brexit provides the ideal opportunity to show how technological progress and groundbreaking innovation, as a result of sensible regulation and minimal barriers to entry (aided for example by Clean Tax Cuts - see Chapter 11), are the future of combating climate change. The UK must pave the way on this.

27 Rolnick, David et al. (2019). "Tackling Climate Change with Machine Learning." In Climate Change AI, 1.
28 ibid., 59.
29 Oxford Analytica (2019). New EU commissioner to get tougher on tech rules. https://www.emerald.com/insight/content/doi/10.1108/OXAN-DB246328/full/html
30 McLaughlin, Michael & Daniel Castro (2019). What Will Brexit Mean for AI in the EU? https://www.datainnovation.org/2019/08/what-will-brexit-mean-for-ai-in-the-eu/
31 Mercatus Center (2020). Permissionless Innovation. https://permissionlessinnovation.org

Amending Green Belt Planning Policy for a More Sustainable Britain

This part was written by Eamonn Ives.

Green belts in the United Kingdom are an exercise of marketing masterclass. They are popular among both young and old, rich and poor, and rural and urban dwellers alike.[32] It is my contention, however, that this fact is based upon a carefully crafted fiction. Few people actually understand what green belts are,[33] and fewer still realise the significant social, economic, and ecological detriments they create.[34]

The United Kingdom's system of planning – that is, what can legally be done with a given piece of land – is dominated by the Town and Country Planning Act 1947. This Act, as the London School of Economics' Paul Cheshire notes, "was conceived in a world which believed in the efficiency and wisdom of state control of markets."[35] As is often the case with government intervention into markets, the Town and Country Planning Act 1947 has been an unmitigated disaster – none less so for the way in which it laid the foundations for a system of green belts to be established.

Totalling over 1.6 million hectares, or about 12.4% of the land area of England, green belts are areas of the country where development and new building is highly restricted, or is in fact altogether impossible.[36] Green belts make it more difficult for housebuilders to put up new homes, and even place limitations around what existing landowners can do with their property.

32 CPS (2018). Housing Poll – September 2018. https://www.comresglobal.com/wp-content/uploads/2018/10/CPS-Housing-Past-Vote-28092018-1.pdf

33 Barker, Kate (2006). Barker Review of Land Use Planning (Final Report - Recommendations). https://webarchive.nationalarchives.gov.uk/20120906054541/http://www.communities.gov.uk/documents/planningandbuilding/pdf/154265.pdf; Ipsos MORI (2016). Attitudes towards use of green belt land. https://www.ipsos.com/sites/default/files/migrations/en-uk/files/Assets/Docs/Polls/cpre-green-belt-tables-aug-2015.pdf

34 Hilber, Christian A.L. & Wouter Vermeulen (2014). The impact of supply constraints on house prices in England. http://personal.lse.ac.uk/hilber/hilber_wp/Hilber_Vermeulen_EJ_forthcoming.pdf

35 Cheshire, Paul (2009). Urban Containment, Housing Affordability and Price Stability - Irreconcilable Goals. http://www.spatialeconomics.ac.uk/textonly/SERC/publications/download/sercpp004.pdf

36 MHCLG (2019). Local Planning Authority Green Belt: England 2018/19. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/840240/Green_Belt_Statistics_England_2018-19.pdf

Green belts can be found across the length and breadth of the United Kingdom, encircling almost all major urban areas. The most well-known is perhaps the Metropolitan Green Belt, which totals over half a million hectares and wraps around London.[37] Others surround Liverpool, Manchester, Cambridge, Bristol, and elsewhere.[38] While it is true that microscopic fractions of green belts have been lost in recent years, since 1979 the area of land designated as green belt has more than doubled in size.[39] Indeed, expansion at this rate would mean over half of the entire country being set aside as green belt alone by the end of the century. In the grand scheme of things, ever more of the United Kingdom is being dedicated to green belt land.

> "Few people actually understand what green belts are, and fewer still realise the significant social, economic, and ecological detriments they create."

According to the National Planning Policy Framework – the government's rulebook for development – green belts serve five distinct purposes:[40]

1. To check the unrestricted sprawl of large built-up areas;
2. To prevent neighbouring towns merging into one another;
3. To assist in safeguarding the countryside from encroachment;
4. To preserve the setting and special character of historic towns; and
5. To assist in urban regeneration, by encouraging the recycling of derelict and other urban land.

In many respects, current green belt policy could therefore be regarded as reasonably successful. By and large, towns and cities which are surrounded by green belts are prevented from expanding and this – at least to some extent – fulfils these objectives.

37 Grimwood, Gabrielle Garton & Cassie Barton (2019). Green Belt. http://researchbriefings.files.parliament.uk/documents/SN00934/SN00934.pdf
38 ibid.
39 ibid.
40 MHCLG (2019). National Planning Policy Framework. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/810197/NPPF_Feb_2019_revised.pdf

But the cost of green belts has been exceptional. The housing affordability crisis can be attributed in large part to green belt planning restrictions,[41] as can the country's sluggish productivity growth.[42] And, as I shall explain below, green belts do not necessarily deliver the environmental benefits many expect they do.

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As aforementioned, green belts enjoy support among large parts of the general public.[43] But this popularity is frequently founded upon misunderstanding. Just the name, in fact, can often be dubious – indeed, there are plenty of instances of 'green' belts being anything but.

At least some of our parliamentary representatives are waking up to this fact. Siobhain McDonagh, the Member of Parliament for Mitcham and Morden, has excellently documented parts of the Metropolitan Green Belt which confound the image one might typically conjure up when thinking about it.[44] Examples include a garage in Tottenham Hale, a waste plant in West London, and countless scrappy strips of scrubland – scarcely the verdant woodlands or rolling hills one might imagine.[45]

This is the first crack in the narrative that green belts are the saviours of the beloved natural beauty of England. There are many parts of green belts which, far from being bucolic vistas and important habitats, are aesthetically and ecologically bankrupt tracts of land, no different to countless examples of unprotected land.

But the argument does not stop there. Two-thirds of English green belts are devoted to agricultural use.[46] While perhaps giving the impression of being the prime embodiment of 'naturalness,' farming – especially when done intensively – is often less 'green' than urban parkland or even gardens.[47]

41 OECD (2011). OECD Economic Surveys: United Kingdom. http://www.oecd.org/social/labour/47319830.pdf

42 Cheshire, Paul (2012). Links between Planning and Economic Performance: Evidence Note for LSE Growth Commission. http://www.lse.ac.uk/researchAndExpertise/units/growthCommission/documents/pdf/contributions/lseGC_SERC_planning.pdf

43 See footnote 32.

44 McDonagh, Siobhain (2018). London's Green Belt is far from a rural idyll – so we must build on it to solve the housing crisis. https://www.telegraph.co.uk/politics/2018/05/08/londons-green-belt-far-rural-idyll-must-build-solve-housing/

45 ibid.

46 CPRE (2018). England Green Belts. https://www.cpre.org.uk/resources/housing-and-planning/planning/item/download/5578

47 Dieter Helm (2015). In defence of the Green Belt. http://www.dieterhelm.co.uk/assets/secure/documents/Green-Belt-Paper-.pdf; Myers, John (2017). Yes in my back yard: How to end the housing crisis, boost the economy and win more votes. https://static1.squarespace.com/static/56eddde762cd9413e151ac92/t/598c03c5be6594815d7741c5/1502348236073/John+Myers+-+YIMBY+-+Final.pdf; Papworth, Tom (2016). A Garden of One's Own: Suggestions for development in the Metropolitan Green Belt. https://www.adamsmith.org/news/press-release-new-paper-reveals-where-londons-green-belt-must-be-built-on-to-curtail-housing-crisis

Coupled with harmful regulations like the European Union's Common Agricultural Policy – which can actively incentivise farmers and land managers to remove natural features like trees, hedgerows, and ponds – agriculture is by no means an environmentally harmless undertaking.[48]

The argument that simply keeping intensive farming while removing the ability of people to have a garden of their own – particularly valued by many individuals – improves the natural environment is simply wrong.[49]

If green belt planning restrictions were sensibly loosened and housing was permitted to be constructed on suboptimal tracts of land, the types of houses built would likely be fairly conventional, family homes, complete with decent-sized gardens. This is imperative, because we know that gardens can be surprising hotspots for biodiversity, even relative to undeveloped land – as they serve as habitats for birds, insects, small mammals and amphibians.[50]

Green belts are not the ecological oases which their proponents often attempt to make them out to be.[51] While not denying that certain parts of green belts can be of genuine environmental importance – about five % of England's green belts are Sites of Special Scientific Interest, for instance[52] – much of them are not. However, there are solutions at hand which could simultaneously improve our environment – both within green belts and beyond – while also solving some of the country's most pressing economic and social problems.

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48 For a possible market-based future framework for agricultural and land policy in the United Kingdom, see: Caldecott, Ben, Sam Hall & Eamonn Ives (2017). A greener, more pleasant land: A new market-based commissioning scheme for rural payments. https://brightblue.org.uk/wp-content/uploads/2017/11/Agreenermorepleasantland.pdf

49 Cheshire, Paul (2013). Greenbelt myth is the driving force behind the housing crisis. https://blogs.lse.ac.uk/politicsandpolicy/greenbelt-myth-is-the-driving-force-behind-housing-crisis; UK National Ecosystem Assessment (2011). UK National Ecosystem Assessment: Chapter 7: Enclosed Farmland. http://uknea.unep-wcmc.org/LinkClick.aspx?fileticket=efdvEHfdplg%3d&tabid=82

50 Goddard, Mark A., Andrew J. Dougill & Tim G. Benton (20019). Scaling up from gardens: biodiversity conservation in urban environments. http://homepages.see.leeds.ac.uk/~lecajd/papers/Goddardetal.TREE.pdf; Leuing, Tim & James Swaffield (2008). Cities Unlimited: Making urban regeneration work. https://www.policyexchange.org.uk/wp-content/uploads/2016/09/cities-unlimited-aug-08.pdf; Davies, Zoe G. et al. (2009). A national scale inventory of resource provision for biodiversity within domestic gardens. https://kar.kent.ac.uk/28303/1/Davies_et_al._Biological_Conservation_2009.pdf; Cheshire, Paul & Boyana Buyuklieva (2019). Homes on the right tracks: Greening the Green Belt to solve the housing crisis. https://www.centreforcities.org/wp-content/uploads/2019/09/Homes-on-the-Right-Tracks-Greening-the-Green-Belt.pdf

51 Pullinger, Rebecca (2019). The value of green belts. http://green.brightblue.org.uk/conservation-conversation-blog/2019/11/29/rebecca-pullinger-the-value-of-green-belts

52 CPRE (2019). Green Belt myths: what you need to know. https://www.cpre.org.uk/what-we-do/housing-and-planning/green-belts/in-depth; also see footnote 36.

Debates around green belts are really debates around housing. To many supporters of green belts, the building of homes is inimical to their main desired objective, namely, preserving the environment. Yet, as has already been established, there are plenty of parts of green belt land which are of little ecological value, or even have a net negative environmental impact – as with intensive agriculture.

Even so, the idea that the overall stock of natural assets in the country could be improved by amending green belt policy and allowing such areas to be developed might strike one as fanciful. Counterintuitively, there are good reasons to suggest otherwise.

> "There are solutions at hand which could simultaneously improve our environment – both within green belts and beyond – while also solving some of the country's most pressing economic and social problems."

First of all, let us start with the most intensively farmed sections of the green belt. As has already been touched upon, these sections of land quite often have a net negative impact on the environment, in that they actively lead to the deterioration of nature.[53] Here, it should not be difficult to understand why building houses on such tracts of land, assuming some green space accompanies them, is not going to be any more environmentally degrading than the status quo.

Indeed, perhaps cognisant of this fact, housebuilders are increasingly looking at how they can ensure their developments are as ecologically friendly as possible. Barratt, for instance, have partnered with the RSPB to pioneer homes which work with nature, not against it – whether by using bricks which double up as nesting boxes for swifts, or by ensuring there are 'wildlife corridors' running throughout their developments, so as to allow animals to move around them unhindered.[54]

Obviously, housing can be put up in a way which is decidedly not environmentally friendly. Sites could be erected haphazardly, with little thought to the natural world in which they sit. Nevertheless, if done appropriately, new homes – even those built on green belts – can help, not harm, the environment. A future essay might put forward market-based proposals as to how building policy could work with the environment, rather than against it.

But the problems with current green belt policy do not end here. A more holistic view of the situation presents an altogether more damning indictment of them from the perspective of environmental sustainability.

53 Almaraz, Maya et al. (2018). Agriculture is a major source of NOx pollution in California. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5792222/

54 RSPB (2019). Kingsbrook, a new era in wildlife-friendly housing. https://www.rspb.org.uk/our-work/conservation/projects/kingsbrook-housing/

Fundamentally, green belts prevent the building of homes where they would otherwise be demanded. Yet they do not necessarily halt house building entirely. What tends to happen instead is known as 'displacement' – whereby developments spring up just on the other side of the green belt in question, perhaps in the form of satellite towns.[55] Ironically, these developments might be built on land which is actually of more remarkable environmental quality than that inside of green belts – showing that the planning system which campaigners claim protects the environment actually does the exact opposite.[56]

> "By artificially keeping people further away from where they work and socialise, the opportunities for them to make use of low-carbon modes of transport, like walking and cycling, diminishes greatly."

Of course, people living in towns and villages created by such displacement often want or need to commute into whichever city lies beyond the other side of the very green belt which has forced them to live further away. This simple fact necessitates the construction of new transport links, like railways and roads, running directly through the green belt. This leads to a second irony, as it could well result in more of the 'concreting-over' that green belt proponents oppose so ardently.

Moreover, by artificially keeping people further away from where they work and socialise, the opportunities for them to make use of low-carbon modes of transport, like walking and cycling, diminishes greatly. More are likely to opt to drive, which only serves to increase air pollution and greenhouse gas emissions.[57] Inevitably, this has helped lead to a situation whereby urban areas rank vastly better in terms of their carbon intensity than rural ones.[58]

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The United Kingdom is home to some of the world's most beautiful and picturesque landscapes. Few would want to see those vistas spoilt by row upon row of identical houses. But, equally, it is a fact which must be confronted that much of the country's green belts do not come close to the imagined idylls envisioned by many. Moreover, the considerable damage they do to the economy cannot be discounted.

55 Papworth, Tom (2015). The green noose: An analysis of Green Belts and proposals for reform. https://static1.squarespace.com/static/56eddde762cd9413e151ac92/t/56f71c957c65e4881ff6e395/1459035287095/The-Green-Noose1.pdf

56 Ives, Eamonn (2019). How a million new homes could make the green belt greener. https://capx.co/how-a-million-new-homes-could-make-the-green-belt-greener/

57 Cheshire, Paul (2014). Turning houses into gold: the failure of British planning. http://cep.lse.ac.uk/pubs/download/cp421.pdf

58 Ives, Eamonn (2019). How cities can save the planet. https://capx.co/how-cities-can-save-the-planet/

Too great a proportion of green belts are ruined by environmentally deleterious agriculture. Other parts have already been developed, yet cannot be replaced by genuinely useful, and indeed more aesthetically appealing and ecologically harmonious, infrastructure.

Green belt policy may have succeeded in achieving some of its objectives, but it has failed the environment. Not that this should come as a surprise to anyone – the environment itself is beyond green belts' purview, and never has been within it. But that is not to say that cannot change in the future. Minor amendments to planning regulations within green belts – ideally coupled with changes to how development takes place within cities, too[59] – would help in securing a more sustainable tomorrow for the whole country, without compromising on the genuinely valuable aspects of the United Kingdom's green and pleasant land.

Conclusion

This chapter has put forward a preliminary template for a so-called Green Brexit. From unleashing innovation in artificial intelligence and biotechnology to kickstarting a global movement of clean free trade, the United Kingdom's departure from the European Union is an opportunity to shed environmentally harmful regulation and protectionist tendencies. Far from isolating itself, the United Kingdom must use Brexit to take up a role of global leadership on clean environmental policy. It can only do this by embracing technology and innovation, reconsidering regulatory and subsidy regimes, and promoting international cooperation on clean free trade. Moreover, on a more domestic level, tweaks to green belt policy can successfully manage the trade-offs between environmental protection and the demands of a growing population and economy.

> "The United Kingdom is home to some of the world's most beautiful and picturesque landscapes. Few would want to see those vistas spoilt by row upon row of identical houses."

By becoming a trend-setting, world-beating pioneer of market environmentalism, the United Kingdom can turn itself into a blueprint for the rest of the international community to follow. It must use this historic opportunity wisely and boldly.

59 Dumitriu, Sam (2018). Absurd planning laws have led to the housing crisis. https://www.thetimes.co.uk/article/99871402-4bde-11e8-820c-9146b8a57671

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14. European Union: A Market Environmentalist Vision for Europe

Pieter Cleppe & Kai Weiss

The European Union wants to be a global champion in the fight against climate change. Taking the important lessons of market environmentalism into account is imperative in designing an effective Green Deal.

Environmentalism is on the top of the agenda in European politics. After major gains for Green Parties around Western Europe in the 2019 Elections,[1] European Commission President Ursula von der Leyen has promised to transform Europe into a global trendsetter on environmental policy. In this chapter, we will take a look back at the EU's environmental

1 Ashdown, Nick (2019). Why Europe's Green wave slows to a trickle in the east. https://www.politico.eu/article/europe-green-wave-struggles-in-east/

legacy, its policy versus the environmental outcomes and what lessons we can learn from past experiences. Subsequently, we will analyse the Commission's European Green Deal proposal and set out to determine key factors that the EU needs to take into account in its environmental policy in the future.

European Environmental Policy Throughout History

Environmental politics on the European level goes back as far as the European Union's founding in the first place. Looking through the EU's history, one will sadly be faced with disappointment by the EU's shaky green track record for the most part. Indeed, the EU has too often implemented environmental policy in a centralised, regulatory, and intrusive manner that leaves out environmentally conscious private actors. The results have routinely been frustrating.

Common Agricultural Policy

Take, for instance, the EU's *Common Agricultural Policy* (CAP), i.e. the framework of farm subsidies. Apart from the considerable waste of financial resources it entails,[2] it has also incurred major environmental downsides ever since its inception. First of all, the subsidy scheme has encouraged years of overproduction,[3] which is of course the antithesis of anything that might be understood as sustainable. This even persists until today, despite the minor changes that have been made.

> "There have been significant overlaps of EU subsidies with nitrate pollution around the continent."

Just recently, more than 2,500 scientists across the EU have urged the EU "to act on the science, and undertake a far-reaching reform of the EU's Common Agricultural Policy (CAP) without delay." They argue that EU subsidies financially support and exacerbate the so-called 'intensive' agriculture model, which has been shown to harm biodiversity.[4]

Indeed, the EU's agricultural policy has had profound negative effects on the environment. For instance, there have been significant geographical overlaps of EU subsidies with Italy's nitrate pollution - something that the EU attempted to hide, but which was recalculated and confirmed by the *New York Times*.[5] NYT investigative reporting also established a connection

2 Cleppe, Pieter (2019). The EU's long term budget: an overview of the spending areas in most need of reform. http://cleppe0.blogspot.com/2019/10/the-eus-long-term-budget-overview-of.html

3 Weiss, Kai (2019). The CAP doesn't fit - why the EU's farm subsidies are ripe for reform. https://capx.co/the-cap-doesnt-fit-why-the-eus-farm-subsidies-are-ripe-for-reform/

4 Foote, Natasha (2019). 2500 scientists urge EU to reform environmentally 'damaging' CAP. https://www.euractiv.com/section/agriculture-food/news/2500-scientists-urge-eu-to-reform-environmentally-damaging-cap/

5 Appuzo, Matt, Selam Gebrekidan, Agustin Armendariz, and Jin Wu (2019). Killer Slime, Dead Birds, an Expunged Map: The Dirty Secrets of European Farm Subsidies. https://www.nytimes.com/interactive/2019/12/25/world/europe/farms-environment.html

between CAP-funds and nitrate pollution in Poland's waterways. Yet, this doesn't simply extend to the prevalence of nitrate pollution; EU policy has entrenched bad environmental outcomes by giving into agricultural lobbies and allowing inefficient and damaging farming practice to persist without self-innovation. The NYT authors conclude that, as a result, the subsidies have "had serious environmental consequences and left pockmarks across Europe. Decaying algae belches deadly gas onto beaches in Northwestern France. Dwindling bird populations threaten the balance of entire ecosystems. Greenhouse gas emissions from agriculture are on the rise." Indeed, where there are a lot of subsidies, there is a lot of pollution.

Beyond that, those businesses keen to experiment with what they consider to be more sustainable models of agriculture have had little opportunity to actually compete, faced with traditional, entrenched competitors funded by the EU to the tune of billions of euros every year.

The Common Fisheries Policy

The EU's fisheries policies have caused major environmental problems as well. For years, the EU has enforced policies requiring fishermen to discard perfectly fine fish if they had already reached certain quotas.[6] According to opponents of the *Common Fisheries Policy* (CFP), this is mainly the result of the EU's decision to employ quotas, instead of opting for the US or Nordic model whereby all fish which has been caught should be brought on land, where it can then be inspected.[7]

Furthermore, overfishing has led to plummeting fish stocks. In 2010, 88% of the stocks in the EU were overfished, with 30% outside of safe biological limits. Among other reasons, this result has been the outcome of EU and member state policies, such as subsidies for fisheries and quotas that were inconsequentially applied, being set too high due to 'socio-economic' reasons.[8]

6 Booker, Christopher (2007). Fishing quotas are an ecological catastrophe. https://www.telegraph.co.uk/news/uknews/1570439/Fishing-quotas-are-an-ecological-catastrophe.html

7 Paterson, Owen (2018). EU fishing policy is a biological, environmental, economic and social disaster. https://www.thesun.co.uk/news/7139501/eu-fishing-policy-disaster-owen-paterson-opinion/

8 Khalilian, Setareh, Rainer Fröse, Till Requate & Alexander Prölß (2010). Designed for Failure: A Critique of the Common Fisheries Policy of the European Union. https://www.ifw-kiel.de/publications/journal-article/designed-for-failure-a-critique-of-the-common-fisheries-policy-of-the-european-union-5882/

The European Commission has openly apologised for decades of CFP disaster[9] and the EU has introduced a half-baked reform since,[10] though the results have not been successful so far.[11] Considering the CFP was one of the longest standing EU policies until recently doesn't exactly bode well for its environmental credentials.

Overall Climate Policies

Long before Barack Obama came up with the US 'cap and trade' scheme, the EU had its own version, which is called the *Emission Trading System* (ETS). While the fundamental idea behind it isn't bad, the way it has been implemented has led to major problems.

The central idea of ETS was to oblige companies that emit CO2 to provide compensation but at the same time allow them to buy the right to emit, so as to make sure CO2 is mostly emitted by those able to do it with the lowest economic cost.

In reality, however, major industrial firms often managed to convince politicians to provide them with free emission rights,[12] [13] threatening to scrap jobs otherwise. In this way, the ETS distorted fair competition as it ended up supporting big manufacturers that emit a lot of CO2 regardless.

This meant that a policy intended to limit CO2 emissions has ended up providing an unfair advantage to the biggest emitters of CO2. The problem has been known for many years, but reforms have proven very difficult.

Furthermore, in its drive to designate so-called 'climate-friendly' and 'climate-hostile' technologies, the EU has committed major mistakes. For one, the EU and European governments encouraged diesel cars through regulations and preferable tax treatment for many years. The EU promoted diesel, for example, by agreeing to a voluntary CO2 target for vehicles that was largely in line with what diesel technology could meet.[14] Partly as a result of this, diesel sales soared. In 1990, only 10% of new car registrations were for diesel cars. This increased to almost 60% in 2011. Today, however, diesel has largely fallen out of favour,

9 Waterfield, Bruno (2011). European Commission apologises for disastrous fishing policy. https://www.telegraph.co.uk/news/worldnews/europe/eu/8635623/European-Commission-apologises-for-disastrous-fishing-policy.html

10 Hubbard, Rebecca (2018). EU opportunity to make fish discarding history. https://www.euractiv.com/section/agriculture-food/opinion/eu-opportunity-to-make-fish-discarding-history/

11 Neslen, Arthur (2018). Use of fish discard exemptions by EU trawlers soars before ban. https://www.theguardian.com/environment/2018/dec/11/use-of-fish-discard-exemptions-by-eu-trawlers-soars-before-ban

12 Balanya, Belen & Oscar Reyes (2016). Carbon welfare: How big polluters plan to profit from EU emissions trading reform. https://corporateeurope.org/sites/default/files/attachments/the_carbon_welfare_report.pdf

13 Open Europe (2009). ETS awards millions in windfall profits to oil companies and heavy industry. http://openeuropeblog.blogspot.com/2009/12/ets-awards-millions-in-windfall-profits.html

14 Plumer, Brad (2015). Europe's love affair with diesel cars has been a disaster. https://www.vox.com/2015/10/15/9541789/volkswagen-europe-diesel-pollution

accused of being more environmentally damaging than other fuels. Thus, the EU's top-down control of environmental policy has ultimately led to this epic u-turn and great uncertainty, whilst imposing a great cost on the general industry.[15]

Many similar policies that might turn out to be mistakes in the future are in place today. For instance, the policy consensus at the EU level is to promote electric cars now. Few listen to dissident voices, like the International Energy Agency, which has warned that driving electric cars – which enjoy tax breaks - won't make a dent in global carbon emissions, and may even increase pollution levels.[16] As senior researcher Elsa Dominish explains "the mining of many metals used for renewable energy technologies and electric vehicles already impacts wildlife biodiversity."[17] The question naturally arises then: could new u-turns be in the offing in the future?

Similarly, the EU got it badly wrong by designating biofuels as 'climate friendly,' despite warnings that they destroy habitats such as tropical rainforests.[18] The NGO Transport and Environment (T&E) has in fact claimed that using biofuels is worse for the environment than traditional fossil fuels.[19]

After the European Commission threw its weight behind biofuels in 2003, an external report it commissioned to scrutinise its own policies concluded in 2011 that the policy in fact harmed the goal to reduce CO2 emissions, as it actually caused higher emissions.[20] This was due to indirect land use changes tied to biofuels, with newly incentivised activities like clearing grasslands and forests ultimately negating any reductions in greenhouse gasses.[21] Meanwhile, however, further tax incentives and subsidies had been introduced.

Moreover, according to the report, "there was little scientific evidence available in 2003 that supported the claim that a European biofuels target would be guaranteed to bring down greenhouse gas emissions."

15 Michaopolous, Sarantis (2017). EU's biofuels policy damages investor confidence, farmers claim. https://www.euractiv.com/section/biofuels/news/wed-sr-commissions-biofuel-policy-damages-investor-confidence-eu-farmers-claim/

16 Hodges, Jeremy (2018). Electrifying the World is No Panacea for Global Warming, IEA says. https://www.bloomberg.com/news/articles/2018-11-13/electrifying-the-world-no-panacea-for-global-warming-iea-says

17 Stumvoll, Ashley (2019). Shift to renewable energy could have biodiversity cost, researchers caution. https://news.mongabay.com/2019/06/shift-to-renewable-energy-could-have-biodiversity-cost-researchers-caution

18 Jowit, Julliete (2008). Biofuels 'do more harm than good.' https://www.theguardian.com/environment/2008/jan/20/biofuels.renewableenergy

19 Crisp, James (2016). Biodiesel worse for the environment than fossil fuels, warn green campaigners. https://www.euractiv.com/section/climate-environment/news/biodiesel-worse-for-the-environment-than-fossil-fuels-warn-green-campaigners/

20 Edwards, Robert, Luisa Marelli & Declan Mulligan (2011). Critical issues in Estimating ILUC Emissions - Outcomes of an Expert Consultation. https://publications.jrc.ec.europa.eu/repository/handle/JRC64429

21 Saeed, Saim & Sara Stefanini (2016). The good and the bad of biofuels. https://www.politico.eu/article/the-good-and-the-bad-of-biofuels-first-second-generation-wood-crop-waste/

A similar debate is occurring with regards to biomass. The current EU target requires 20% of the energy used in Europe to come from 'renewable' sources by 2020, with biomass currently representing almost 60% of renewable energy consumption in the EU.[22]

It's estimated that burning wood for energy, which is what biomass ultimately amounts to, typically emits one-and-a-half times more CO2 than coal and three times more than natural gas. Opponents argue that to qualify biomass as 'renewable' energy fails to take into account the scientific evidence showing that forest biomass harvesting and combustion for energy purposes exacerbates climate change by causing deforestation outside of Europe. A court case at the highest EU court challenging the EU's definition of biomass as 'renewable' is currently pending.[23]

Then there is wind and solar energy. While renewable energy sources hold many promises for the future, they are accompanied with downsides at the moment, such as the hazardous materials which are needed to produce solar panels,[24] as well as the lack of proper plans on how to deal with the waste stemming from the production of solar panels and wind turbines.[25] Despite these potential problems, the EU has been consistently promoting the described technologies, while nuclear energy, another clean energy source, has been on the defensive at the EU level.[26]

The EU's support for diesel and biofuels has already been revised. Given the abundant evidence, it's not excluded that in a number of years, the policy choices to support, for example, biomass and electric cars may be seen as grave errors, too, at least from an environmental perspective.

At the heart of the problem is that the EU has opted to impose a fixed EU target for a certain technology to reduce CO2 emissions, whereas defining what this amounts to isn't very obvious.[27] This has forced EU member states into expensive and unworkable policies, often for lack of evidence, and it has caused cheaper methods of reducing CO2 emissions to be ignored.

22 European Union (2019). The European Commission's Knowledge Centre for Bioeconomy. https://publications.jrc.ec.europa.eu/repository/bitstream/JRC109354/biomass_4_energy_brief_online_1.pdf

23 Simon, Frederic (2019). EU dragged to court for backing forest biomass as 'renewable energy.' https://www.euractiv.com/section/energy/news/eu-dragged-to-court-for-backing-forest-biomass-as-renewable-energy/

24 Cleppe, Pieter (2016). After Donald Trump's victory Europe needs to look again to fossil fuels. https://www.newsweek.com/post-donald-trump-europe-reconsider-fossil-fuels-527601

25 Hoekema, Sharai (2019). The Illusions Of Renewables, Solar And Wind Will Not Save Our Climate. https://www.whatsorb.com/energy/the-illusions-of-renewables-solar-and-wind-will-not-save-our-climate

26 Cleppe, Pieter (2019). Climate crisis: Why green activists need to give nuclear energy a chance if they really want to tackle CO2 emissions. https://www.independent.co.uk/voices/climate-crisis-nuclear-power-co2-carbon-fukushima-environment-a9105961.html

27 Open Europe (2013). Open Europe submission to the UK Government's Balance of Competences Review: Environment and Climate Change synopsis. http://archive.openeurope.org.uk/Content/Documents/Open_Europe_submission_Environment_and_Climate_Change.pdf

In recent times, the EU has decided to continue handing out subsidies to fossil fuels[28] and has, as mentioned above, withheld[29] embarrassing reports on its CAP policies from publication.

In general, it is safe to say that the EU's environmental policy has hardly been a success, to say the least. Top-down mandates, environmentally damaging subsidy schemes, support for unproven technologies, and a tendency to try to coordinate efforts centrally have resulted in often terrible environmental outcomes. A serious rethink is necessary when looking at the future of Europe's environmental policy.

The European Green Deal and the Future of EU Environmental Policy

Unfortunately, many of the wrong-headed ideas and failures of the past are potentially set to be repeated again. Looking at the future of European environmental policy, the Commission's *European Green Deal* (EGD), presented in December 2019 and planned to be implemented step-by-step in the years after, is set to be at the forefront.[30] [31] Von der Leyen herself has called the EGD "Europe's man on the moon moment."[32]

> "The European Green Deal shows a discomforting lack of belief that civil society and the private economy can do much, if anything, for the environment."

The major goal of the European Commission is that the continent becomes carbon neutral by 2050.[33] As part of this, the goal of reducing carbon emissions by 50% by 2030 is proposed to be increased to 55%. These targets are scheduled to be enshrined into EU legislation with a *Climate Law* in 2020. As part of the Green Deal, a rapid phasing out of fossil fuels with a corresponding expansion of renewable energies is set to occur.[34]

To achieve this, the European Commission has proposed dozens of reforms. Many show a discomforting lack of belief that civil society and the private economy can do much, if anything, for the environment. Instead, the plans, which would essentially amount to a European economy centrally directed from Brussels, are based on the belief that government is the primary answer to global warming. If there is room for businesses or regions to do *anything* positive, it is only possible if Brussels proffers the incentives to do so.

28 Friends of the Earth Europe (2018). MEPs back continued EU subsidies for fossil fuels. https://www.foeeurope.org/MEPs-back-continued-EU-subsidies-fossil-fuels-221118
29 Neslen, Peter (2019). European commission accused of 'deliberately harming climate action.' https://www.theguardian.com/environment/2019/may/28/european-commission-accused-of-deliberately-harming-climate-action
30 European Commission (2019). The European Green Deal, COM(2019) 640 final. https://ec.europa.eu/info/sites/info/files/european-green-deal-communication_en.pdf
31 For the remaining chapter, the source of footnote 30 will be abbreviated as EGD.
32 Tamma, Paola, Eline Schaart and Anca Gurzu (2019). Europe's Green Deal plan unveiled. https://www.politico.eu/article/the-commissions-green-deal-plan-unveiled/
33 EGD, p. 4
34 EGD, p. 6

It is true that the Commission realises that "new technologies, sustainable solutions and disruptive innovation are critical to achieve the objectives" of the EGD, and that this means that the EU needs to emphasise experimentation.[35] Indeed, the EU's Technical Expert Group on Sustainable Finance has shown that to achieve the Commission's climate goals, "an additional €175 to 290 billion a year of *private* investment" is needed,[36] which would be around 1.5 % of GDP.[37]

But to enable these new technologies, innovations, and investments, the EU is focusing on the implementation of a European-wide industrial strategy, which would promote Europe as the global player in environmentalism as well as digitalisation.[38] The vocabulary used in this is often highly belligerent, and the industrial strategy as envisioned by Commission officials[39] is primarily based on implementing "trade defence" mechanisms as well as centralised programs to spur investment. As has been noted,[40] [41] this strategy promotes protectionism and furthers trade wars externally and is based on the conviction that the EU should be able to pick winners and losers internally - in the case of the EGD, environmental winners and losers. This approach will inevitably also be riddled with national governments and special interests weighing in, trying to promote their respective national industrial champions. The entire approach of solving environmental issues by industrial strategy and through *dirigisme* by a central authority is, as Glen Hogdson writes, "bad for business, bad for consumers and bad for the economy as resources are not allowed to flow to where they will be best served."[42]

The self-interest of different actors in the process of implementing the EGD goes farther than mere industrial strategy, however. Due to the opposition of some member states to the ambitious climate goals and reforms - primarily those less economically developed or whose energy sectors are mostly based on fossil fuels, such as Poland,[43] the Commission has been careful to emphasise that the green transformation will be "just and inclusive."[44]

35 EGD, p. 18

36 Emphasis added. EU Technical Expert Group on Sustainable Finance (2019). Technical report on EU Taxonomy: Overview. https://ec.europa.eu/info/sites/info/files/business_economy_euro/banking_and_finance/documents/190618-sustainable-finance-teg-report-overview-taxonomy_en.pdf

37 EGD, p. 15. €260 billion are "about 1.5% of 2018 GDP28." Thus, this also includes the UK, which will not participate in the EGD after leaving the union.

38 EGD, p. 7

39 Hanke, Jacob (2019). Europe's last line of defense. https://www.politico.eu/article/europe-economy-trade-last-line-of-defense-competition/

40 Weiss, Kai (2019). As Britain prepares to leave, the EU slides further towards protectionism. https://capx.co/as-britain-prepares-to-leave-the-eu-slides-further-towards-protectionism/

41 Bromund, Ted R. (2019). The U.S. Should Oppose the EU's Turn Toward Industrial Policy. https://www.heritage.org/sites/default/files/2019-09/IB5004_NEW.pdf

42 Hodgson, Glen (2019). Achieving a carbon neutral economy by 2050. p. 2. http://www.epicenternetwork.eu/wp-content/uploads/2019/12/Achieving-a-carbon-neutral-economy-by-2050.pdf

43 Tamma, Paola and Bayer, Lili (2019). Germany eats Poland's green lunch. https://www.politico.eu/article/draft-plan-for-decarbonization-fund-commission/

44 EGD, p. 2

Thus, the environmentally destructive Common Agricultural Policy will see little to no reforms, supposedly to ensure "a continued decent living for farmers."[45] Furthermore, it wants to make use of the *European Social Fund+* for global warming, too,[46] but even more so, the Commission wants to introduce a *Just Transition Mechanism*, including a *Just Transition Fund* "to leave no one behind."[47] The so-called 'mechanism' could cost up to 100 billion euros.[48] Moreover, the EGD also promotes a 'social' component, which has little to do with actual environmentalism. Instead, it seeks to smuggle in social democratic economic visions and fobs off sceptical countries through increased payments out of the budgetary and non-budgetary tools of the Commission.

> "The EU needs to put more trust in local and national governance."

Access to the general EU budget will actually be very limited for the expensive plans of the Commission, as many member states want a smaller *Multiannual Financial Framework* (MFF) for 2021 to 2027, leaving meagre resources for new programmes. At the same time, however, other member states want a bigger budget, though often in order to use the additional financial resources for agricultural subsidies and cohesion funds.[49]

Instead, the Commission wants to introduce its *own resources*, i.e. new taxes going directly to the EU rather than through member states, on "non-recycled plastic-packaging waste."[50] Furthermore, 20% of the revenue from the EU Emissions Trading System should be allocated to EGD programs, and "at least 30% of the InvestEU Fund will contribute to fighting climate change."[51] A European-wide additional tax on airline tickets, flights or jet fuel is also being considered.[52]

The most heavy-handed and potentially dangerous intrusion comes in the financial sector, however. The European Investment Bank is proposed to be turned into "Europe's climate bank."[53] Moreover, private banks as well as the European Central Bank's monetary policy could be affected by the EGD as part of the creation of an environmental taxonomy.

The taxonomy, which would classify economic activities according to their environmental sustainability,[54] is a promising idea in and of itself to make the environmental component in the economy more transparent, thereby managing and integrating climate and

45 EGD, p. 12
46 EGD, p. 19
47 EGD, p. 16
48 Bayer, Lili and Tamma, Paola (2019). EU leaders set to endors €100B Just Transition Mechanism. https://www.politico.eu/pro/eu-leaders-set-to-endorse-e100b-just-transition-mechanism/
49 Bayer, Lili (2019). EU budget fight heats up. https://www.politico.eu/article/eu-budget-fight-heats-up-council-of-the-eu-finnish-presidency-european-commission/
50 EGD, p. 15
51 ibid.
52 Oroschakoff, Kalina, Hanne Cokelaere, Eddy Wax, Paola Tamma, and Jakob Hanke (2019). The EU's 7 post-election green priorities. https://www.politico.eu/article/the-eus-7-post-election-green-priorities/
53 ibid., p. 16
54 ibid., p. 17

environmental risks into the financial and economic system. One condition of this is that the EU has to assess these economic activities fairly across the board - without exception. This is a big *if*, considering Germany has indicated a refusal to let nuclear energy be considered a clean energy source, whereas France insists that it will be. The political compromise could be that both nuclear energy - for France - and gas - for Germany - could be considered clean, defeating the very purpose of the taxonomy.[55]

Worse, however, are plans in which way this taxonomy might subsequently be used, namely, by implementing a "green-supporting factor, whereby banks would have to hold less capital against loans that helped finance climate-friendly projects."[56] This goes hand in hand with demands that the ECB, now led by Christine Lagarde, would follow a monetary policy which assists in the fight against global warming.[57] Opponents have issued stark warnings that this could lead to further financial instability and a complete politicisation of the European Central Bank, which, at least theoretically, is supposed to be neutral and apolitical.

A Green Free Programme as An Alternative

Not everything in the Green Deal is bad and it is particularly important to point out the positive steps the Commission intends to take in the future - on these specifically, the EU should focus much more than it currently does. It is around these positive aspects that the EU should build a better - and less intrusive - Green Deal. In this endeavour, the Commission has to follow the mantra it has proclaimed itself: that "citizens are and should remain a driving force of the transition,"[58] not Brussels.

Phasing Out Subsidies and Other Special Interests That Hurt the Environment

One of the most welcome signs of the European Green Deal is the demand that all subsidies going to the fossil fuel industry have to end.[59] If Europe wants to be serious about tackling climate change, it can't continue subsidising energy sources that actively hurt the environment. And yet, the Commission has to go farther than merely fossil fuel subsidies. It will also have to reform, and even reduce, agricultural subsidies, which, as we have seen above, are often environmentally damaging as well. Cuts to the Common Agricultural Policy will be a hard sell to some national governments and farm interest groups, but if the Commission and other EU institutions want to take a stand, this is perhaps the first and most important place to do so.[60]

55 Barbière, Cécile (2019). Paris, Berlin divided over nuclear's recognition as green energy. https://www.euractiv.com/section/energy-environment/news/france-and-germany-divided-over-nuclears-inclusion-in-eus-green-investment-label/
56 Crow, David and Stephen Morris (2019). UniCredit boss warns against push to incentivise 'green' lending. https://www.ft.com/content/2971d024-1696-11ea-8d73-6303645ac406
57 Arnold, Martin (2019). Christine Lagarde wants key role for climate change in ECB review. https://www.ft.com/content/61ef385a-1129-11ea-a225-db2f231cfeae
58 EGD, p. 22
59 EGD, p. 10
60 See footnote 3.

Furthermore, it is also encouraging that the Commission plans to eliminate special treatment for other sectors that are also engaged in environmentally damaging activities, for example by closing tax loopholes in the aviation and maritime industries.[61]

Finally, the further politicisation of the ECB has to be prevented by any means - and, thus, special treatment for renewable energies needs to be abstained from. However, the ECB should simultaneously stop buying bonds composed of carbon-intensive and fossil fuel industries as part of its already highly politicised asset purchase program[62] - something more than 150 economists have already demanded.[63] This would have the positive side effect of reducing the size of this politicised program, too.

The goal should be clear in all of this: to create an actual level-playing field, so that energy sources can compete with each other freely.

"The monthly Strasbourg move leads to 11,000 to 19,000 tons of carbon emissions annually. Parliament should stay in one city."

Greening EU Institutions and Policies

To avoid the accusation of hypocrisy, the EU institutions themselves must also refrain from environmentally damaging behaviour. This means suspending the monthly train, truck, and car rides by the European Parliament to Strasbourg for plenary sessions. Parliament should stay in one city, not move back and forth between two. It is estimated that the monthly Strasbourg move leads to 11,000 to 19,000 tons of carbon emissions annually - the equivalent of around 3,000 passenger vehicles.[64]

Moreover, every new policy proposal by the EU needs to be sustainable itself. For instance, the mobility package - or posting workers directive - which was introduced to allegedly protect workers' rights, would compel trucks that have crossed borders within the EU to return to their home country every eight weeks, e.g. from France to Romania. This is hardly environmentally conscious.[65]

61 EGD, p. 10

62 Through the Asset Purchase Program, the ECB buys bonds and assets of governments and corporations.

63 Positive Money Europe (2019). The ECB must act now on climate change: Open letter to Christine Lagarde. p. 2. http://www.positivemoney.eu/wp-content/uploads/2019/11/Open-Letter-to-Christine-Lagarde-on-climate-change.pdf

64 Chadwick, Lauren (2019). EU parliament's €114m-a-year move to Strasbourg 'a waste of money', but will it ever be scrapped?. https://www.euronews.com/2019/05/20/eu-parliament-s-114m-a-year-move-to-strasbourg-a-waste-of-money-but-will-it-ever-be-scrapp

65 Eder, Florian (2019). POLITICO Brussels Playbook, presented by Deutsche Börse: Keep on truckin'? - Malta mass - Impeachment Day. https://www.politico.eu/newsletter/brussels-playbook/politico-brussels-playbook-presented-by-deutsche-borse-keep-on-truckin-malta-mess-impeachment-day/

Adopting a Pro-Innovation Attitude

If Europe wants to be the continent of innovation and new environmental technologies, the EU needs to give entrepreneurs and innovators the room to actually do business and innovate, rather than just go on a spending spree and picking winners and losers through industrial strategy.

Too often in the past, Brussels has adopted the precautionary principle, under which innovations are prohibited before we actually know much about them, out of fear that they may cause negative side-effects. Rather, the EU should take a step back and leave the market more room to come up with innovations, whilst observing fairly and closely what the consequences of a new technology will be. Adam Thierer has called this approach permissionless innovation, in which one does not need a permission to engage in innovation, and regulation is only implemented if substantial downsides come to light after a while.[66]

This also means that the EU and its member states need to drop their often irrational, unscientific behaviour vis-à-vis particular technologies. This includes nuclear energy, but also genetically modified food, lab meat, or glyphosate. Certainly, these technologies and innovations bring with them disadvantages, but by and large, they have the potential to improve the environment on a massive scale.

Leading the Charge on Free Trade

Rather than implementing an industrial strategy, including further trade defence mechanisms, the EU should stop the war-like attitude, and instead, leading by example, become a global voice for free trade. This is particularly important in the environmental debate, where freer trade can incentivise more innovation and cross-border cooperation.

> "The EU should become a global voice for clean free trade."

It is promising, then, to see the Commission propose that the EU should "reinforce current initiatives and engage with third countries on cross-cutting climate and environment issues."[67] This has to include promoting the complete global elimination of fossil fuel and environmentally damaging subsidies as well as the completion of free trade agreements on environmental goods and services with other countries and regions. The EU is in a unique position for this, with 27 countries cooperating with one another and stepping out into the world together to defend free trade and the market economy.

Trust Local and National Approaches

Going beyond global warming, the EU also needs to put more trust in local and national governance instead of micro-managing from the top. This is especially true for the preservation of natural sites and wonders as well as pristine places around Europe. For instance, there is

66 Thierer, Adam (2014). Permissionless Innovation: The Continuing Case for Comprehensive Technological Freedom. Mercatus Center.

67 EGD, p. 20

hardly any use for the Commission to be active in "sustainable re- and afforestation," when the forest area in the EU has already increased by the size of Portugal from 1990 to 2015.[68] The consequences of these developments, including the inevitable trade-offs in the preservation of nature, should be left to those closest to the situation, not to policymakers in a city hundreds of miles away.

Conclusion

> "The EU is in a unique position to make a successful environmental transformation happen."

If the European Union truly wants to improve the environment, it must let go of the dangerous tendencies of centralisation that it has clung to for long. Instead, it must promote clean free trade, entrepreneurship, innovation, and local approaches, whilst shedding damaging propositions such as industrial strategies, which will inevitably turn into economic failure - and potentially hurt the environment along the way. The EU is in a unique position to make a successful environmental transformation happen. For that, a rethink of past policy is sorely needed.

68 The Economist (2019). Why France's forests are getting bigger. https://www.economist.com/europe/2019/07/20/why-frances-forests-are-getting-bigger

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15. Austria: A Market Environmentalist Vision for Österreich

Kai Weiss

Austria is a country defined by nature, most of it embedded in the Alps. To protect its environment, the country needs to strengthen local decision-making and open possibilities to innovation, whilst not going down the path of unsustainable mass development.

Concerts and festivals. Hot water springs in the snow. (Fake) Snow in summer. A wooden dragon on the mountain, which is burned down every New Year's Eve. A 180 meter - or 590 feet - Summit Cross. A snowboard park in the form of the body of Pamela Anderson.[1] And zoos in the mountains full of penguins.[2]

Ischgl, a small town in Tyrol, Austria, close to the border of Switzerland and Italy, is one of the most popular skiing locations in the Alps. Usually home to around 1,600 people, the population increases to around 20,000 in winter, at peak times to 25,000. And its visitors, escaping - or at least trying to escape - the restlessness of our modern, urban world, expect a good service. "Everything needs to be prepared for the tourist," says Günther Aloys, one of the visionaries in Ischgl who came up with the ideas mentioned in the first paragraph.[3] Indeed, avid skiers, snowboarders, and families expect some new idea or some new innovation every year, to make things different and even more fun than in previous years.

> "Trusting in local government, markets, and private property rights might prove to be exactly what is needed to safeguard the beauty of Austria's nature."

At the same time, there is a growing sense of disillusionment among the people living in and around the Austrian Alps. The towns are overcrowded, escaping into nature is often an impossibility, and even more so, that very nature is increasingly subject to further infrastructural development for sports and entertainment purposes, as mountains and other natural wonders are opened up for developmental purposes. Sites under special protection are under attack.[4]

Ischgl is an archetype of what is happening in many areas around the world, but particularly in mountainous Austria today. The country is in many regards made by nature. Regardless of where one lives, one is close to the Alps - and the farther west you go, the more likely you are to be right in the middle of them, with gigantic mountains right in front of your door. Even all the way to the east, where the landscape slowly flattens out, opportunities to go into nature are within an hour's reach.

This blessing also means, however, that Austria will be especially faced with challenges due to global warming as well as tourism. And as glaciers are melting away,[5] this also means that responding to those challenges and trade-offs will be imperative in safeguarding the environmental beauty that Austria was blessed with. Trusting in local government, markets, and private property rights might prove to be exactly what is needed.

1 Stationen (Bayerischer Rundfunk) (2019). Alpine Rebellen - Zwischen Wahnsinn und Wintermärchen. https://www.br.de/mediathek/video/stationen-02012019-alpine-rebellen-zwischen-wahnsinn-und-wintermaerchen-av:5bec1159fa70500018d32df5

2 Addendum (2019). Land der Berge - Skination Österreich auf Talfahrt?. https://www.youtube.com/watch?v=ppqatUNKDek

3 See ft 1.

4 ibid.

5 Taschwer, Klaus (2019). Gletscher schmelzen schneller als gedacht. https://www.derstandard.at/story/2000101030367/gletscher-schmelzen-noch-schneller-als-gedacht

The Trade-Offs of Austrian Environmental Policy

Austria's environmental debate is riddled with discussions about the trade-offs between preservation and progress. The problem of how ski areas and towns dependent on winter sports should be managed is merely the tip of the iceberg (no pun intended), though it is a particularly important and illustrative example: people want to spend time in nature, see the wonders of the earth, and engage in recreational activities. They also want to be entertained and to be provided with services, food, music, and accommodation. At the same time, however, these demands will eventually and counterproductively erode that escape into nature that those people are so eager to find. They will threaten that pristine nature and, through overcrowding especially, put a strain on the environment - as well as local communities.

There are many similar cases. Consider major discussions around economically important infrastructure. These include the A23 - the main highway around Vienna - the Tauern Road, and the Schober Pass, discussions on whether new tunnels, such as the Lobau Tunnel, should be constructed, or, most prominently, the Brenner Pass, which connects Germany and Italy and cuts right through the Austrian Alps. Environmentalists argue that the massive volume of cars and trucks using these roads every day are a major environmental burden. Others respond that these roads and networks are essential for Europe's economy and are a great boon for Austria, which becomes an integral country to do business in.

Finally, comparable discussions arise in energy politics. Renewable energies, for instance, could lead to a cleaner economy in the medium-to-long run. At the same time, constructing thousands of wind turbines in an otherwise largely untouched landscape would endanger the landscape itself. Hydroelectric energy, traditionally a significant part of Austria's energy mix, can be an effective way to generate energy and with little carbon emissions. But they are also a great incision into nature and potentially threaten the surrounding ecosystems.[6]

Overcoming Trade-Offs

Realising that these trade-offs exist already goes a long way in establishing a realistic vision to protect the environment. As Shawn Regan writes, environmentalism "involves making trade-offs, and doing so in a way that recognizes that nature is as ever changing as the demands that humans place on it. How those trade-offs are made in a world of diverse and conflicting human values ought to be the central environmental question."[7]

As has been established throughout this book, a system based on the market economy, local governance, and private property rights is the most promising avenue for environmental success. Property rights internalise the decision-making and opportunities to protect nature to those that are actually affected by it. Thus, those faced with the actual trade-offs as described and with the most knowledge of the effects of a policy will actually be in charge and will have an incentive to protect the environment.

6 WWF. Mythos Wasserkraft: Glorifizierung und Wirklichkeit.
7 Regan, Shawn (2016). Environmentalism Without Romance. https://www.perc.org/2016/06/08/environmentalism-without-romance/

Indeed, Austria and the German-speaking area at-large provides a wonderful example of how spending time in nature and the construction of the infrastructure needed for that can be achieved through private initiative. The *Österreichische Alpenverein* (Austrian Alpine Club) as well as the *Deutscher Alpenverein* (German Alpine Club) have a century-long history of maintaining hiking trails, building and managing huts in the mountains as well as helping outdoor men and women with advice on travels and hikes as well as discounts and hiring services for equipment.

> "Local decision-making and self-government constitutes a particularly effective avenue to solving environmental problems in Austria."

While the clubs receive substantial subsidies by federal governments today - in the Austrian case, around €3.6 million annually in recent years[8] - they have many different income streams, most of which are non-governmental.[9] Indeed, governments have also been standing in the way of the *Vereine*, as new regulations on sewage systems, the treatment of drinking water, and fire safety have frequently made the management of huts too expensive to continue to exist.[10]

Despite the often-conflicting interplay between the Alpine Clubs and governments, one can find hundreds of huts and well-maintained hiking trails in the Alps primarily due to private citizens coming together and collaborating with each other voluntarily. This provides a great alternative to the popular notion that the trade-off between nature preservation and recreational activities can only be solved by centralised approaches.

Local Solutions

Furthermore, local decision-making can also constitute a particularly effective path to solving environmental problems in Austria. In response to the situation in Ischgl, critics have resorted to demanding that the Austrian government steps in, in order to prevent and clamp down on the commercialisation of the town and ski area.[11] Finding a middle ground between enjoying recreational activities and the economic gain resulting from it, on the one hand, and the preservation of nature and communities, on the other, entails finding a compromise on the local scale and for communities to decide their best way forward.

8 Kleine Zeitung (2016). Der Alpenverein auf der Suche nach Geld. https://www.kleinezeitung.at/oesterreich/5109559/Foerderung-laeuft-aus_Der-Alpenverein-auf-der-Suche-nach-Geld

9 Österreichischer Alpenverein - Sektion Österreichischer Gebirgsverein (2019). Satzung 2019. http://www.gebirgsverein-services.at/downloads/Gebirgsverein_Satzung_2020.pdf

10 Geiger, Stephanie (2012). Wenn Bergromantik den Finanzcheck nicht besteht. https://www.welt.de/regionales/muenchen/article106724203/Wenn-Bergromantik-den-Finanzcheck-nicht-besteht.html

11 See ft. 1.

This aspect of self-government is far from a pipe dream. Some communities in the German-speaking area, faced with over-intrusive tourism and an erosion of their protected natural sites, have found ways to enjoy nature - and let outsiders enjoy them as well - whilst also preventing the 'entertainment park' feeling that the likes of Günter Aloys expect.

Take the three towns of Hallstatt in the state of Salzburg, Aflenz in Styria, and Ramsau in Germany, right across the border from Austria, as prime examples. Hallstatt, with a population of 800, has been host to approximately one million tourists a year with 124 tourists for every citizen (as a comparison, Paris has eight, Vienna four, and Prague six tourists per citizen).[12] But in response, the local community has taken initial steps to limit the number of tourists with caps on how many buses are allowed to enter the town.[13]

Meanwhile, Aflenz in Styria was hit with major economic problems when several businesses in town went out of business due to a failing ski industry. In response, charitable efforts by individual citizens of Aflenz revitalised the local economy and with new alternatives and a greater focus on families with kids, it gained in popularity by finding a niche in the market - while not becoming another Ischgl.[14]

Ramsau, a typical *Bergsteigerdorf* - a mountaineer's town - in Bavaria's Berchtesgaden consciously decided against becoming a skiing town. Instead, it decided for diversification away from mass tourism by using resources to improve the maintenance of hiking trails, to revitalise and strengthen the ecosystem of the region, and by reintroducing species.[15]

Places such as Hallstatt, Aflenz, and Ramsau may compromise to do less. But they also prove to environmental activists how these issues can be tackled through the tools of self-government in a local setting. Indeed, this can be done without coercion from the federal government implementing one-size-fits-all solutions. Such a top-down approach would inevitably lead to dissatisfaction among a substantial number of people and communities, as they are ignored in the decision-making despite having the clearest knowledge of the issue at hand and being affected the most.

Providing Space for Decentralised Solutions

For Austria's federal government, this means that in many environmental trade-off situations, it would be well-advised to stay out of the debate and let more decentralised institutions make decisions. This includes strengthening local governance through less intervention into these local economies. For instance, bailing out ski areas that would already be bankrupt - as the Austrian government is doing today with ski businesses in financial difficulties - will merely postpone the inevitable decline of these businesses and squander resources that could - and have to - be used in better ways by the local communities. Through bailouts, the

12 Kurier (2019). Tourismus: Wenn die Masse zur Plage werden. https://kurier.at/freizeit/reise/tourismus-wenn-die-massen-zur-plage-werden/400699004
13 Die Presse (2019). Hallstatt beschränkt ab Mai den Busverkehr. https://www.diepresse.com/5736637/hallstatt-beschrankt-ab-mai-den-busverkehr
14 See ft. 2.
15 See ft. 1.

government is standing in the way of sometimes radical transformations that need to occur, to more diversification, perhaps away from skiing and further into summer activities which are less environmentally damaging.

This is not to say that the government has no role to play in this. Programmes such as *klimaaktiv*, an initiative from the Federal Ministry for Sustainability and Tourism, give advice and training to local governments and businesses on how to turn their economies greener and cleaner.[16] In cooperation with similar private institutions like *Klimabündnis Österreich*,[17] which specifically works with local communities on their environmental mark, more hands-off approaches by the federal government could bear fruits.

Opening the Way for Innovation

Bailing out ski areas are not the only subsidies by the Austrian government that make little sense on environmental grounds. In addition, the country is known for subsidising the coal industry and oil heating. Indeed, in negotiations on the EU electricity market in the Council, the government was leading the charge on continuing coal-plant subsidies at the tune of €58 billion until 2035.[18] Rather than subsidising unsuccessful business ideas and highly environmentally damaging energy sources, the Austrian government would do well to reduce economic barriers and financial handouts to indirectly promote innovation which improves the environment. Entrepreneurs all across the country are working on solutions in the environmental sector,[19] but are hindered by their government diverting financial resources to other areas, thus leading to economic distortion.

Sensible deregulation efforts need to occur, for instance cutting red tape and making it easier to set up new innovative start-ups, thus catapulting Austria away from countries like Malaysia, Kenya, and Antigua and Barbuda, all of which rank similarly in the *Ease of Doing Business Index* when it comes to the ease of starting a new business.[20] Furthermore, the Austrian government could implement a tax reform which incentivises entrepreneurs, businesses, and innovators to come up with new ideas that protect the environment more effectively. The road map of the new government includes some promising signs of that, including a capital gains tax exemption on ecological investments.[21] Similarly, the harmonisation of

16 klimaactiv (2020). Über uns. https://www.klimaaktiv.at/ueber-uns.html
17 Klimabündnis Österreich. Klimabündnis-Gemeinden. https://www.klimabuendnis.at/klimabuendnis-gemeinden
18 Climate Action Network Europe (2018). Austria's preference for coal rather than climate finance shamed at COP24 Fossil of the Day Award. http://www.caneurope.org/publications/press-releases/1713-austria-s-preference-for-coal-rather-than-climate-finance-shamed-at-cop24-fossil-of-the-day-award
19 See, for example, Neuschnee, a new start-up from Lower Austria, which intends to create new snow without snow canons: https://www.neuschnee.co.at/Start-Neuschnee.html
20 Austria is ranked number 127 worldwide. World Bank (2019). Ease of Doing Business rankings. https://www.doingbusiness.org/en/rankings
21 ÖVP & Die Grünen (2020). Aus Verantwortung für Österreich: Regierungsprogramm 2020-2024. p. 77

the flight ticket tax to €12 for all flights disincentivises short-distance travels through the air, whereas long-distance flights - i.e., those that are difficult to replace by other transport options - become cheaper.[22]

This tax reform could go much further, however. Clean Tax Cuts on environmental innovations and green companies, as described in chapter 11, are a tool worth exploring, instead of demanding ever more levies such as a carbon tax. This is not to say that a carbon tax should be completely opposed - see the debate over this tool in chapter 10 - and excise taxes on environmentally damaging activities such as in the ski industry (for example, an additional levy on day passes in ski areas) could be a prudent method to internalise the burden on the environment.[23] And yet, the focus should be on reducing barriers and expanding opportunities to improve the environment, rather than penalising 'bad' behaviour - with the counterproductive distortions this creates. As part of this, even policies usually not linked to environmentalism could lead to more green innovation: for instance, the abolition of the minimum corporate tax[24] would improve the business environment for new companies, thus potentially leading to more environmental innovations seeing the light of day.

> "The focus should be on reducing barriers and expanding opportunities to improve the environment, rather than penalizing 'bad' behaviour."

Expanding Rail Infrastructure

When it comes to the heavily used roads mentioned before - such as the Brenner Pass with close to 17 million cars and 2.4 million trucks taking that route annually[25] - an expansion of alternative transport routes is a potentially advisable - and economically beneficial - way of moving forward, if done right. The currently planned Brenner Base Tunnel would divert the capacity of an estimated 400,000 trucks to the railway[26] (though the construction of big projects such as this would have to be accompanied by an expansion of railway in general to make it worthwhile[27]). Overall, Austria could follow in the footsteps of its neighbouring

22 ibid., p. 78.
23 Oswald, Bernd (2019). Darf man noch Ski fahren?. https://www.br.de/nachrichten/bayern/faktenfuchs-wie-klimaschaedlich-ist-eigentlich-skifahren,RC0NgkF
24 Bunn, Daniel, Kai Weiss & Martin Gundinger (2019). Eine Steuerreform für Wirtschaftswachstum. Tax Foundation and Friedrich A. v. Hayek Institute: p. 22.
25 Statista (2018). Anzahl der Pkw-Abfertigungen an der Brenner Autobahn von 2010 bis 2018. https://de.statista.com/statistik/daten/studie/1031336/umfrage/pkw-abfertigungen-an-der-brenner-autobahn-in-oesterreich/
26 Stol (2019). Handelskammer: 400.000 Lkws auf die Schiene. https://www.stol.it/artikel/wirtschaft/handelskammer-400000-lkws-auf-die-schiene
27 Arora, Steffen (2019). Der Tunnel unter dem Brenner löst Tirols Transitproblem nicht. https://www.derstandard.at/story/2000102416353/der-tunnel-unter-dem-brenner-allein-wird-tirols-transitproblem-nicht

country Switzerland and divert the transit of economic cargo from the road to the railway.[28] In Switzerland, an initiative in the 1990s led to an expansion of railway. The popular Gotthard route, which was used by 1.4 million trucks per year at one point, is now used by well below one million, while about 70% of cargo transport in Switzerland occurs via rail. Similarly, transport opportunities for private individuals could be expanded this way.

Of course, this principle of moving transport from the road to rail has limits itself, especially when it comes to transporting people. Particularly in regard to regional commuting trains, increasing the frequency can lead to empty trains which could be more environmentally damaging than the few people that would take the train just using a car. But if done prudently, by focusing on cities and long-distance rides - for instance, by offering faster, cheaper, and more frequented rides from Vienna to Innsbruck or Salzburg, the environmental benefits of an expansion in rail service could be environmentally beneficial.

This does not mean, however, that this would be the sole responsibility of the ÖBB, the Austrian Rail Service. Rather, private companies have proven around Europe in the last years - due also to deregulation on the EU level in the transport sector - that they can not only compete with state providers, but often very much outperform them.[29] A liberalisation of the railway and coach sectors could, thus, lead not only to better service for customers, but also a more competitive and innovative transport market.

Advocating for Clean Free Trade on the European Level

> "The new government has to use its opportunity and contribute to making EU environmental policy both more environmentally friendly as well as less economically destructive."

The new federal government has indicated that it wants to be an important voice on the EU level in favour of the European Green Deal, more contributions in the long-term budget - the *Multiannual Financial Framework* (MFF) from 2021-2027 - as well as a continent-wide alliance against nuclear energy,[30] a clean energy source that could contribute much to reduce carbon emissions and tackle global warming. Instead, Austria should advocate for a pro-market alternative to the European Commission's newly presented European Green Deal (as discussed in detail in the previous chapter), promoting efforts to complete free trade agreements on environmental goods and services with third countries, and putting clean free trade at the top of the agenda in the World Trade Organisation (WTO), thus enabling the free and voluntary collaboration of people

28 Bonanomi, Klaus & Louise Ungerboeck (2019). Alpentransit mit dem LKW rollt vorwiegend durch Österreich. https://www.derstandard.at/story/2000098577041/alpentransit-mit-dem-lkw-rollt-vorwiegend-durch-oesterreich

29 Weiss, Kai (2018). How Travelling in Europe Has Completely Changed. https://www.aier.org/article/how-travelling-in-europe-has-completely-changed

30 ÖVP & Die Grünen (2020), pp. 104, 115.

across borders in improving the environment. Among this is also the complete abolition of subsidy and state aid programs that hurt the environment, like the ones for fossil fuels or intensive agriculture.

As a relatively small member state of the European Union, Austria would naturally have a difficult time influencing the policy-making process fundamentally. But by introducing these ideas to the debate and potentially building alliances with other market-friendly governments, Austria could punch above its weight - and contribute to making EU environmental policy both more environmentally friendly as well as less economically destructive.

Taking Matters Into Our Own Hands

Finally, no actual environmental transformation can occur without taking more responsibility into our own hands. Too often, Austrians want and expect a greener and cleaner world. But they will do very little themselves to implement this transition, instead merely looking to the federal government in Vienna or EU institutions in Brussels for help, demanding political activism on a centralised platform.

This lack of personal responsibility has many different aspects, including, for instance, a strong sense of NIMBY-ism (*Not In My Backyard*), meaning that one wants change, but every solution proposed that could lead to a cleaner economy, from nuclear to renewable to hydroelectric energy, will be categorically rejected if plans indicate that the facilities for this energy transition would be built in one's surrounding area - i.e., in one's backyard.

An environmental policy based on property rights and local governance would inevitably lead to more personal and communal responsibility in Austria, which would, as explained throughout this book, lead to more environmentally friendly outcomes. A policy based on the market economy and free trade would also result in more innovation so that an economic transformation happens without major economic regression and mass unemployment. Nonetheless, at the end of the day, Austrian environmentalism will also need a cultural rethink in which everyone first looks at him or herself and the surrounding local community - and determine what one can do to better protect the environment in both a personal and communal capacity.

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16. Why We Should Be Optimistic

Johan Norberg

Discussions on environmentalism and global warming are steeped in warnings of impending doom. Looking through history gives us little reason for such intense pessimism, however. Instead we should embrace the continuing challenges with optimism and constructive analysis.

Ever more people think that our growth model is unsustainable, that we are wasting natural resources, polluting the atmosphere, and threatening the entire planet. And they argue that there is no reason to expect that 'more of the same' – economic growth and technological innovation – is going to get us out of this mess.

I am referring, of course, to the environmental debate of the 1970s. At that time, the eco-pessimists were right to worry: In manufacturing towns, white collar workers often brought an extra shirt to work since the first one was dirty by noon. The Great Smog had shut down the city of London for four days in 1952, and according to one study, 12,000 people died as a result.[1] The dumping of chemicals in Love Canal in upstate New York made the area so dangerous that hundreds of families had to be relocated.

> "Reasonable fears quickly took on apocalyptic undertones and turned into a questioning of modern, industrialised society."

And the establishment did not seem to care. One typical US mayor said that "If you want this town to grow, it has got to stink,"[2] and a leading Swedish Social Democrat concluded that we should "sacrifice the West Coast" – a particularly lovely region blessed with magnificent nature (where I happen to have a summer home) – for industrial exploitation. Why not? There was plenty of coast around the Mediterranean we could travel to instead.

Reasonable fears quickly took on apocalyptic undertones and turned into a questioning of modern, industrialised society. Many feared that we would have springtime without birds, we would experience acid rain, massive deforestation, extinction of most species, and in major cities, people would have to walk around with protective masks to save themselves from dirty air.

Often this was combined with fears of overpopulation. One planet was not enough for everybody, much less for another billion people, assumed neo-Malthusians. "The battle to feed all of humanity is over," Paul Ehrlich wrote in *The Population Bomb* in 1968, "In the 1970s, the world will undergo famines – hundreds of millions of people are going to starve to death."[3] In 1972, the influential Club of Rome warned that infinite growth is impossible in a finite world, and that every indicator of pollution increased exponentially, and we would soon be running out of most natural resources.

The best case for optimism about present environmental problems is that none of this happened, and that we know why it didn't. The reason for this is not that we limited population growth or individual freedoms, but because more people were liberated to create, develop and use new, better and greener technologies and processes.

Apocalypse Averted

Since 1968, when Ehrlich wrote that the end was near, the share of people living in extreme poverty has declined from around 50% to less than 10% worldwide. The child mortality rate has decreased by 85%. Since 1968, the world population has increased by more than four billion, and yet the number of chronically undernourished people has declined by 150

1 Bell, Michelle L., Devra L. Davis and Tony Fletcher (2004). "A retrospective assessment of mortality from the London smog episode of 1952: the role of influenza and pollution." Environmental Health Perspectives 112, no. 1: 6–8.
2 McAfee, Andrew (2019). More From Less. Scribner, p. 67.
3 Ehrlich, Paul (1968). The Population Bomb. Ballantine Books, p. xi.

million people. The share of the population in hunger has declined from more than a third to less than 11%. Hunger today is not the result of too little food, but too many oppressive governments and brutal wars.[4]

The same goes for natural resources. In the 1980s, Soviet economists concluded that their factories needed 50% more material and more than twice as much energy as Western factories needed to produce a unit of wealth.[5] If planners thought that a company needed material and energy, it got it. Under socialism, they were not under constant pressure to improve their efficiency to beat the competition from other innovative companies that found new ways to conserve material and energy.

It's very different in a free market, with property rights, price signals and freedom for research and innovation. The company that managed to reduce the thickness of a beer can by even a tenth of a millimetre saved millions in material costs, which reduced the weight of a beer can from 85 to 13 grams.[6] Resource optimisation like this occurs in every business in every sector. The ratio of material used to wealth created has declined by around two thirds in one century.[7]

Some people object that, if the population and the economy grow even faster, this doesn't help much. This is called the *Jevons Paradox*, after the English economist William Stanley Jevons, who observed in the 1860s that better industrial technologies relied less on coal, but this also reduced their price and thus, even more coal being used. But recently we have turned the corner. In rich countries like the US, we now use less aluminium, nickel, copper, steel, stone, cement, sand, wood, paper, fertiliser, water, crop acreage and fossil fuel every year. The consumption of 66 out of 72 resources tracked by the US Geological Survey is declining.[8] In rich countries we have reached 'peak stuff.'

Many assume that this is because we import more goods, but our manufacturing production has also increased rapidly,[9] and yet, it gets by with fewer resources. As Paul Romer has explained, growth does not necessarily mean more ingredients in the pot. If that were the case, there would be a limit to growth. Rather, growth means better recipes. Some of these recipes use fewer ingredients to make a better dish.[10]

Stocks of almost all the resources that the Club of Rome worried about have increased. Several have quadrupled. Gale Pooley and Marian Tupy investigated 50 commodities, covering energy, food, materials and metals, and found that their average real price has

4 See data and sources in Johan Norberg (2016), Progress: Ten Reasons to Look Forward to the Future. Oneworld.
5 Shmelev, Nikolai , Vladimir Popov & Vladimir Mikhaĭlovich Popov (1990). The Turning Point: Revitalizing the Soviet Economy. Tauris, p. 128.
6 McAfee (2019), p. 101.
7 Gierlinger, Sylvia & Fridolin Krausmann (2011). "The Physical Economy of the United States of America." In Journal of Industrial Ecology, no. 3.
8 McAfee (2019).
9 Federal Reserve of St. Louis (2018). Total Manufacturing Production for the OECD Total Area. https://fred.stlouisfed.org/series/PRMNTO01O1Q661S
10 Romer, Paul (2019). The Deep Structure of Economic Growth. https://paulromer.net/deep_structure_growth

fallen by 36% since 1980. They point out that the real price of something is the time we have to work to lay our hands on it. And since the real average income has increased, this time-price of commodities has declined even more, by almost 65%.[11]

Carbon dioxide emissions have increased rapidly around the world, contributing to global warming. Yet, this emissions increase was an indirect way of dealing with the more immediate threat against human life that the absence of wealth and modern energy sources caused. For example, because of a lack of electricity, most of the world's population used to cook by burning solid fuels like wood, charcoal, and dung indoors, which cause respiratory diseases that still kill some 1.5 million every year. At the same time, the share of deaths from indoor air pollution has been reduced by two thirds since 1990.[12]

> "The ratio of material used to wealth created has declined by around two thirds in one century."

If we look at other emissions than carbon dioxide, we have seen a dramatic improvement in wealthy countries. Total emissions of the leading pollutants into the air have been reduced by more than two thirds in the US and Europe since 1970. In Britain, volatile organic compounds were reduced by 66%, nitrogen dioxide by 72, direct particulate matter by 75%, sulphur dioxide by 97%, and lead by 99%.[13]

According to a long-term data series, the concentration of smoke and sulphur dioxide in London's air since the late sixteenth century increased for 300 years, but then dropped fast. As statistician Bjørn Lomborg concludes, "the London air has not been cleaner than today since the Middle Ages."[14]

As Daniel Hannan alluded to in the foreword to this book, the Thames in London is an example of how rivers and lakes have returned to health after sewage companies started treating water and maintaining adequate collecting systems. In 1957, the filthy and stinking river was declared biologically dead. Today it is in excellent health with 125 different species of fish. In 2008, the short-snouted seahorse, which is extremely sensitive to pollution, was back in the Thames.[15]

The number of oil spills in our oceans has also declined. Between 2010 and 2018, a total amount of 163,000 tonnes were spilled. This is much less than the *annual* amount spilled in the 1970s. The quantity of oil spilled has been reduced by 99% since 1970.[16]

11 Pooley, Gale & Marian Tupy (2018). The Simon Abundance Index. Cato Institute, Policy Analysis no. 857.
12 Ritchie, Hannah & Max Roser (2019). Air Pollution. https://ourworldindata.org/air-pollution
13 Ibid.
14 Lomborg, Bjørn (2001). The Skeptical Environmentalist. Cambridge University Press, pp. 164f.
15 Svensson, Mattias (2015), Miljöpolitik för moderater. Fores, p. 26.
16 The International Tanker Owners Pollution Federation Limited (2019). Oil Tanker Spill Statistics 2018.

After warnings of dying forests in Eastern Europe in the late 1970s and 80s many feared that acid rain would turn Europe's forests into chemical deserts. But it never happened, partly because pollution levels fell, partly because the alarming predictions were vastly exaggerated. In the EU, the ecosystem areas where critical loads of acidification are exceeded declined from 43 to 7% between 1980 and 2010, and eutrophication[17] is also on the decline.[18]

Deforestation has stopped in wealthy countries. From 1999 to 2015, Europe's forest area grew by more than 0.3% annually and in the United States by 0.1%. Recent data from NASA shows that the world as a whole is also greening. There are now 2 million square miles more of green leaf area than in the early 2000s – a 5% increase. China and India alone account for one-third of the greening, which rejects old presumptions about the inevitability of overexploitation in rapidly growing populations and economies.[19]

"Deforestation has stopped in wealthy countries. From 1999 to 2015, Europe's forest area grew by more than 0.3% annually and in the United States by 0.1%."

New agricultural technologies employed since the early 1960s have saved an area equal to two South Americas from being turned into farmland. Between 1995 and 2010, land used for farming increased only by 0.04% annually. The two researchers of this study, Jesse Ausubel and Iddo Wernick, even project that mankind has reached "peak farmland," and that land use for agriculture will decline by 0.2% annually 2010 to 2060.[20]

Combined with urbanisation, this has saved us from the most horrible extinction scenarios. Mankind has always threatened wildlife and other species. Especially today, as tropical rain forests are being cut down, species-rich environments are being depleted. And yet, in 1975, Paul and Anne Ehrlich predicted that around half of all species on the planet would have gone extinct by now. Since the world is estimated to be home to somewhere between 5 to 15 million species, several millions would have gone extinct since then. But whereas extinction is indeed a problem, it has not happened at the scale predicted, and some species have actually started bouncing back as a result of human efforts.

Many of the most biologically diverse and valuable areas are now being set under protection at a very high pace. Globally, protected areas nearly doubled from 8.5% to 14.3% of the world's total land area between 1990 and 2013. Twice the size of the United States is now protected.

17 Eutrophication is oxygen depletion of a water body due to an excess of nutrients or minerals.
18 European Environment Agency (2015). Exposure of ecosystems to acidification, eutrophication and ozone. http://www.eea.europa.eu/data-and-maps/indicators/exposure-of-ecosystems-to-acidification-3/assessment-1
19 Forest Europe (2015). State of Europe's Forests 2015; FAO (2015). Global Forest Resource Assessment 2015; Chen et al. (2019). "China and India lead in greening of the world through land-use management." In Nature Sustainability.
20 Ausubel, Jesse (2012). Peak Farmland. Lecture for the Symposium in Honor of Paul Demeny.

What Went Right?

What happened? Why didn't the predicted eco-disaster take place?

"Poverty and need [are] the greatest polluters", as India's Prime Minister Indira Gandhi memorably put it in 1972. "How can we speak to those who live in villages and in slums about keeping the oceans, the rivers and the air clean when their own lives are contaminated at the source? The environment cannot be improved in conditions of poverty."[21]

The environment is a luxury good, in the technical sense of the term: a good for which demand increases more than proportionally as our incomes rise. Only when we have managed to supply our children with food and education, we can start worrying about the planet's future more generally. The fact that today's environmental movement saw the light of day only in the 1970s, when we had recently abolished extreme poverty and hunger in the Western world, is symptomatic of this.

> "The biggest environmental problems are in poorer countries, but interestingly, they often begin to clean up their act at a much earlier stage of development than rich countries were when they did it."

Wealth changes our behaviour in several ways. As individuals we start to think about how our behaviour affects our local environment, as consumers we think about how our goods are produced, and as voters we start to demand that governments deal with spillover effects.

In the literature, an *Environmental Kuznets Curve* (EKC) is often discussed, as was previously touched on in chapter 5. Many forms of environmental degradation follow an inverted U-curve. As countries start to get richer, the damage to the environment grows, but after a certain point, further income growth results in improvements to the environment as well.

A review of 878 observations from 103 empirical studies between 1992 and 2009 concluded: "Results indicate the presence of an EKC-type relationship for landscape degradation, water pollution, agricultural wastes, municipal-related wastes and several air pollution measures."[22] The world's most polluted places are not London and New York anymore, but cities like Beijing and New Delhi. The researchers of the Environmental Performance Index, which was referred to in chapter 5 as well, confirm this: "income is a major determinant of environmental success."[23]

21 The Times of India (1972). Indira Gandhi's address.

22 Koirala, Bishwa S., Hui Li, Robert P. Berrens (2011). "Further Investigation of Environmental Kuznets Curve Studies Using Meta-Analysis." In International Journal of Ecological Economics and Statistics, 22 (S11).

23 Yale News (2018). 2018 Environmental Performance Index: Air quality top public health threat. https://news.yale.edu/2018/01/23/2018-environmental-performance-index-air-quality-top-public-health-threat

Technological innovation is intimately related to wealth, since it makes it possible for universities and companies to invest more, and for consumers to purchase the resulting products. New processes and technologies made it possible to produce and transport with less pollution and waste. Wastewater treatment and solid-waste management reduced the damage to the environment. The use of filters, scrubbers, adsorbers and smarter processes reduced emissions from factories. Cars became cleaner. Amazingly, a modern car in motion emits less pollution than a 1970s car did when it was in the parking lot, turned off, due to gasoline vapour leakage.[24]

The biggest environmental problems are in poorer countries, but interestingly, they often begin to clean up their act at a much earlier stage of development than rich countries were when they did it. They can learn from our past mistakes, and also our progress, since green technologies that were developed at a high cost and over a long time in prosperous countries can now be used by less prosperous countries. The United States started using unleaded gasoline in 1975. India and China made the same transition in 1997, at which point they had only 13% of the wealth of Americans in 1975.[25]

China suffers from a very serious pollution problem, but in fact, we can be optimistic about the fact that age-standardised deaths from air pollution per 100,000 people have declined by more than half in China between 1990 and 2017.[26]

The Ultimate Resource

As the development economist Julian Simon explained, we get it wrong so often because we always underestimate human ingenuity.[27] We did not solve these environmental problems by dismantling industry and transportation, implementing rationing or picking green technology winners, which were often seen as the only possible solutions back then. It happened because economic growth and technological innovation gave us new, previously unimaginable capabilities. And that was made possible because property rights, the price mechanism, and fierce competition, combined with the internalisation of externalities, gave people an incentive to protect resources and to come up with new and better solutions.

We are facing major environmental problems today, none more threatening than global warming, which will lead to more floods, droughts, eradication of species, tropical diseases, hurricanes, and rapidly melting glaciers. The consequences and the costs may be very large, especially in poorer countries.

But interestingly, the risk of dying in a climate-related disaster – floods, drought, storms and extreme heat – has been reduced by 95% since the 1950s.[28] Not because we have fewer disasters today, but because we have more wealth and technology to deal with all sorts of

24 Ealey, Lance A. & Glenn A. Mercer (2002). "Tomorrow's cars, today's engines." In: The McKinsey Quarterly, no 3.
25 Goklany, Indur M. (2007). The improving state of the world: Why we're living longer, healthier, more comfortable lives on a cleaner planet. Washington, DC: Cato Institute, pp. 149f.
26 Ritchie & Roser (2019).
27 Simon, Julian (1996). The Ultimate Resource 2. Princeton: Princeton University Press.
28 Ritchie, Hannah & Max Roser (2019). OFDA/CRED International Disaster Data. https://ourworldindata.org/ofdacred-international-disaster-data

unforeseen problems. Had we had negative growth since the 1950s, we would have less global warming today, and yet, almost half a million more people would die from climate-related disasters every year.

In the future, we will have to create this growth with non-carbon technologies. Some of the solutions are already here and others are waiting to be discovered. Solar power, fourth generation nuclear power, biofuels based on algae, crops genetically modified to fix their own fertiliser from the air, laboratory meat that does not require livestock, steel producers that replace cooking coal with fossil-free energy and hydrogen, with water as the only by-product, AI, and many other technologies will help us design ever more efficient processes. We can even take CO2 out of the air with artificial processes, such as the leaf mentioned by Daniel Hannan all the way at the beginning of this book.

> "One billion more people means that we have one billion more mouths to feed, but also one billion more brains, with a billion new ideas and more innovations."

Many of these technologies are only at the experimental stage and all of them are too expensive to be rolled out globally. But what do you do when something is too expensive? You encourage technological innovation to reduce them in price, and facilitate economic growth to increase our ability to purchase these technologies.

The ultimate resource, Simon concluded, is the human brain, and it is infinitely renewable. Yes, one billion more people means that we have one billion more mouths to feed, but also one billion more brains, with a billion new ideas and more innovations, and with these, the potential to save and improve our world.

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17. Hope for a New Generation of Market Environmentalists

Maz Shakibaii

Millions of young people demand government action against global warming. However, a new generation recognises the important role markets play.

The future is bright for young environmentalists of the market persuasion. That might be hard to believe, especially given the current political climate around the environment debate, but bear with me. It is easy to get disillusioned by the rise of radical and counter-productive 'solutions' and forms of protest promoted by the likes of Extinction Rebellion - but there is much to be optimistic about on the other side of the spectrum. Far from shutting down low-carbon forms of public transport as a misguided political statement, young conservatives and classical liberals are challenging the eco-pocalyptic narrative on a scale never seen before.

It only takes a short browse online to find ever-increasing examples of young enthusiastic environmentalists tackling the issue of climate change head-on. Indeed, it is now widely recognised that the current awareness surrounding climate change is a direct result of the

activism by individuals such as Greta Thunberg, who have harnessed a global movement of young activists to campaign for climate action. The wider climate movement certainly owes them a debt for the attention they have brought to the issue. Yet, as shown in Chapter 3, these same young activists also often promote ill-advised and counter-productive solutions to the crisis. From top-down government mandates to unaffordable subsidy regimes, they almost invariably leave out the positive and innovative market dynamics that this book has painstakingly shown to be most effective at tackling environmental degradation.

> "Far from shutting down low-carbon forms of public transport as a misguided political statement, young conservatives and classical liberals are challenging the eco-pocalyptic narrative on a scale never seen before."

Yet, instead of endorsing the de-growth, big-government narrative of these environmental factions, some young voices are increasingly championing the sensible and pragmatic solutions presented by market environmentalism. At the British Conservation Alliance for example, we are spearheading a movement of talented young leaders, spread across 25+ university campuses around the UK, upholding a platform for effective and evidence-based market environmentalism.

But how did this all start? In 2017, a group of passionate young environmentalists across the Atlantic started walking in the footsteps of some of the great conservative conservationists of American history, such as Teddy Roosevelt, founder of the modern National Park System, and Richard Nixon, the man who created the Environmental Protection Agency. By launching the American Conservation Coalition (ACC), under the leadership of Benji Backer, they took the pro-market fight to American campuses, educating students and advocating for sustainable solutions to our environmental challenges. According to a poll commissioned at the time of their inception, over two thirds of millennial Republican voters believed the GOP needed to do more when it comes to climate change, with an additional 21% undecided.[1] 78% of this same group believed that it is imperative to accelerate clean energy production in the United States. 57% also said that climate change is human caused while only 21% believed it isn't. Harnessing these widespread sentiments, ACC's campus network has exceeded 190 university campuses, and they've only just begun.

The pro-market environmental movement has proven successful amongst students not only in America, but also in the United Kingdom. Flash forward to 2019, Chris Barnard (President of BCA) and I noticed a clear gap in the market of ideas for pragmatic solutions to these pressing environmental issues at a British level. Inspired by ACC and having spent time working for Students for Liberty within the UK & Ireland, which gave us a wealth of experience related to campus activism and non-profit management, Chris and I set our sights on founding the BCA. From the minute we received the results of our first commissioned poll, conducted by

1 Fair, Larissa (2019). National Survey: Millennial GOP Voters Call on Republicans to Do More to Address Climate Change; Encourage Acceleration of Clean Energy Production in U.S. https://cresforum.org/2019/07/national-survey-millennial-gop-voters-call-on-republicans-to-do-more-to-address-climate-change-encourage-acceleration-of-clean-energy-production-in-u-s/

Blue Beyond (the largest network for young conservatives in the UK), we knew we had made the right choice. Far from what we're led to believe about young conservatives and classical liberals, 80% of those surveyed indicated that they believed that climate change is a threat to society, and an overwhelming 94.1% believed that it is important for the UK to expand and use renewable energy sources such as wind and solar.[2] Polls like these, both in America and the UK, show that the left does not have a monopoly on the climate debate - there is a thirst not just for action, but for the right sort of action, amongst young conservatives and classical liberals across the Atlantic.

The path forward is clear - in order to effectively tackle the radical echo-chamber that the climate doomsdayers have forged on campuses, we need to continue building our momentum. Whether it be through events attracting interested students where lifelong friendships are forged, through open and humble conversations with family members over the dinner table, or through community engagement and grassroots eco-initiatives, it's time to practice what we preach. In the two-and-a-half years since ACC was founded, and the seven months since the BCA was founded, thousands of young pro-market voices around the world have felt empowered to start expressing their environmental views. Other youth organisations have been founded too, dedicated to the ideas of market environmentalism, such as Young Conservatives for Carbon Dividends and Students for Carbon Dividends. Student conferences in Spain, Italy, Israel, Germany, America, Britain, and many other countries have all started emerging with distinct market environmental topics and focuses. Benji Backer has testified in front of the United States House Select Committee on the Climate Crisis, making the case for sensible market-based policy. ACC has had media hits all across the media spectrum, from conservative outlets like Fox Business and the Washington Examiner to more progressive sources like Vox and everything in between. Meanwhile, BCA has been featured in the Telegraph, the Times, Vice, and half a dozen other outlets. People are starting to take notice.

The conservative and pro-market environmental youth movement has achieved so much over the last few years, and is only just getting started. As much as the truth and evidence for market environmentalism is on our side, we'd be nowhere without the thousands of passionate students from all over the world making the case for it each and every day. The movement will only continue to grow, not least emboldened by the publication of this book, as it becomes increasingly clear that a new generation of environmental activists is emerging as a source of great optimism for the future of both our planet and our ideas.

2 British Conservation Alliance (2019). Polls - Commissioned by Blue Beyond. http://www.bca.eco/polls

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18. Conclusion: Towards a Greener and Freer Future

Christopher Barnard

If we want to protect the environment and save the world, we need a better approach. This book has shown what such a vision looks like.

We often hear about the necessity for system change. The central assumption of this assertion is that the current capitalist, market-based world economy is an enemy to the planet and therefore incapable of pulling us out of the mess we are in. This book challenges that narrative. This is not to say that we accept the status quo – far from it. Rather, we argue that a return to genuine market principles, as opposed to crony exploitation, is our greatest ally in the fight against climate change and environmental degradation. We termed this concept *market environmentalism*.

The first, and possibly most important, aspect of market environmentalism is a preliminary understanding and acceptance of the dire situation we are in. One of the reasons the pro-market movement has been losing the battle of ideas on the environment is the passive ignorance, if not outright denial at times, of man's impact on the changing climate. Kai Weiss' introduction lays out the evidence for this, also demonstrating the potentially significant economic, social, and environmental costs associated with a warming planet.

> "A return to genuine market principles, as opposed to crony exploitation, is our greatest ally in the fight against climate change and environmental degradation."

But the severity of the situation does not mean that we must give in to the alarmism and apocalypticism of certain factions of the climate movement. We do not face global extinction within twelve years. What it does mean, however, is that we cannot bury our heads in the sand. This entails a truthful and explicit acceptance of the challenge we face, as well as an emphasis on forward-looking, optimistic, and innovative solutions. Steven Pinker, a psychologist from Harvard University, writes in his book *Enlightenment Now* about new psychological research that indicates: "People are likelier to accept the fact of global warming when they are told that the problem is solvable by innovations in policy and technology than when they are given dire warnings about how awful it will be."[1]

We must harness this truth of human psychology, and craft the emerging global movement for market environmentalism around optimism, policy innovation, and technological progress. We must offer people worried about the future of the world and our environment an alternative to the negative doom and gloom of the *system-change* types.

Indeed, the principles of market environmentalism can foster successful ecological outcomes far superior to top-down management. It has become clear how, as Holly Fretwell and Hannan Downey show in chapter 4, governments repeatedly fail the environment, and that socialist countries have the most pernicious polluting track records in human history. Matthew Lesh outlines in chapter 5 how, in contrast, a market system based on property rights, the internalisation of negative externalities, and a drive for ever-increasing innovation and efficiency is our best hope in tackling environmental degradation.

Property rights, as opposed to government management, stimulate ownership, accountability, and trade - all of which directly benefit the environment. When individuals own land or natural resources, they are intrinsically incentivised to properly and sustainably take care of what they own, either out of personal dedication to environmental protection or a cost-benefit analysis of their property's continued economic value. Moreover, well-established property rights clearly define who pollutes, what, and where. Where such property rights exist, so does accountability as individuals can be held responsible for any damage caused to other's or common property; this form of legal liability naturally incentivises keeping environmental

1 Pinker, Steven (2018). Enlightenment Now: The Case for Reason, Science, Humanism, and Progress. Viking.

damage at an absolute minimum. Finally, trade ensures that owners of a property put its resources to best possible use. A system of trade and negotiation reveals the true value of alternative resource-uses, thereby empowering for example conservationist groups to purchase land that might not have been accorded environmental economic value otherwise.

> "We must offer people worried about the future of the world and our environment an alternative to the negative doom and gloom of the system-change types."

More concretely, this means clean free market policy on a global scale as well as private property-based solutions at the more local level. Policies such as clean tax cuts, clean asset bonds and loans, and clean free trade, as outlined in chapter 11, are powerful tools to incent the market to come up with the innovation and technology necessary to combat climate change. It is only by tearing down barriers and creating a competitive playing field that superior, more efficient technologies will emerge. Meanwhile, Julian Morris demonstrates how localist solutions such as nuisance law and a strict enforcement of private property rights can align the incentives to empower communities and individuals to hold polluters to account. This builds on Ostrom's theory of community-based resource-sharing, as outlined in chapter 6, which emphasises the power of local communities to self-govern their shared resources, to keep one another accountable to responsible use, and to come up with decentralised institutions and concepts through experience and tradition.

Ultimately, through a system of property rights, free market innovation, and market-based policy direction, our theory of market environmentalism is the nexus that harnesses both the incentives and creativity of the free market whilst internalising its negative environmental effects - at both a local and a global level.

On a more case-by-case basis, the major players on the international scene must lead the way on such market environmental policy principles. The United Kingdom, particularly in light of Brexit, has a historic opportunity to make this happen and pioneer the world in technology-empowering deregulation and global clean free trade. The United States can continue showing how competitive energy markets drive down costs whilst driving up innovation, as well as championing clean energy sources. Moreover, it can set the tone for sensible public land management, devolving authority to private conservationists and decentralised institutions, as well as encouraging cooperation across state levels and jurisdictions.

The European Union needs to learn from its top-down, heavy-regulation tendencies of the past, which have created perverse, environmentally destructive outcomes such as under the Common Agricultural Policy and Common Fisheries Policy. As it rolls out its European Green Deal, it should abandon costly and ineffective subsidy regimes and concentrate on providing a healthy, competitive, innovation-friendly marketplace for real environmental leadership. The small mountain-country of Austria has the opportunity to belie its political modesty by showing the world how community-level and localist solutions, Ostrom-style, can bridge the ever-demanding gap between economic progress and environmental protection. Written

and championed by authors native to each region, the respective chapters on the UK, USA, EU, and Austria establish a concrete empirical basis for market environmentalism in action and anticipation.

And as Johan Norberg reminds us, despite the significant national and international challenges, there really is room for optimism. As countries grow richer and more prosperous, they naturally gravitate towards more environmentally sustainable outcomes. Market dynamics provide the incentive to produce more with less, technology reduces our human footprint on the natural world, and public consciousness shifts towards greater awareness. This is only possible when countries reach a certain level of prosperity, and therefore underlines the market environmental argument that economic and environmental success are not incompatible.

> "Market environmentalism champions responsibility, encourages voluntary interaction and raises up individuals and communities."

Daniel Hannan is right - ultimately, this book fizzes with ambition. Our movement fizzes with ambition. For the first time ever, a book has brought together around 15 organisations from within the free market and conservative movement to put forward a truly holistic and international framework for market environmentalism. A system based on resource-maximising property rights, innovation-unleashing free markets, and cost-internalising policy-direction is far more effective at tackling our environmental problems than any top-down government regulation or coercion. As individuals and corporations are held accountable for their actions, entrepreneurs rewarded for pursuing clean innovation, and communities empowered to manage their own resources, we will witness a true transformation of environmental outcomes. Market environmentalism is a concept that champions responsibility, encourages constructive voluntary interaction, raises up individuals and communities, and firmly places environmental sustainability at the centre of our social and economic transactions.

If we want to start winning the battle of ideas on the environment, it is crucial that we rally pro-market voices from across the world around this concept. We owe it not only to our ideas, but also to our planet.

Christopher Barnard
is the President & Founder of the British Conservation Alliance.

Acknowledgement

When first discussing a book collaboration on market environmentalism, in September 2019, we imagined a 25-30 page pamphlet. That seemed ambitious enough. The British Conservation Alliance (BCA) was only a few weeks old, and the Austrian Economics Center's (AEC) research hadn't yet ventured into the realm of environmentalism and climate. But what started with two organisations and a handful of in-house authors rapidly grew to a collaboration of 15 organisations and 21 authors. A small internal project soon became an undertaking of epic proportions, as more and more organisations came to appreciate this crucial gap in the market. Now 160 pages long, this project depended on the tremendous help and enthusiasm of many. It is these people we want to thank.

Beyond the time and effort spent writing their chapters, some even over the Christmas holidays, the numerous authors of this book generously and patiently remained in constant dialogue with us as we nitpicked even the most minute suggestions and edits. Considering all our authors also work for prominent conservative and classical liberal organisations in the world, such time-consuming dedication and enthusiasm for this project were immensely appreciated.

As the book production process sauntered on, many others contributed in various other ways. We had many editors and other colleagues and friends who helped, among them Jesse Bedayn, Amelia Hart, Jason Reed, Joe Oakes, Miles Holder, Amin Haque, Rob Duffy, Michael Way, Richard Mason, Imran Fahiya, Emily Hewertson, and Tristan Hardy, David Tuma, Joshua Lai, Monica Joshi, and Martin Gundinger, as well as Maz Shakibaii for the cover design. Of particular importance was Victoria Schmid's invaluable work on the layout and design.

Beyond that, the writing of this book would have not been possible - certainly not within a few months - without the decades-long engagement on this topic of Terry Anderson and the Property and Environment Research Center (PERC) in Bozeman, Montana. Having been champions of free market environmentalism for 40 years, they were a strong guide and resource for most authors - and the reason we are talking about this concept today. One of us (Kai) was first introduced to market environmentalist ideas through PERC. Over a lunch in Bozeman with PERC, he was told about the fledgling work of the other (Chris) in the UK on these issues. Holly Fretwell of PERC then suggested a potential international cooperation between the AEC and BCA on this. As they say, the rest is history.

Ultimately, this book can only be an introduction to the ideas of market environmentalism within its contemporary, international context. The framework we have put forward is concrete enough to start changing the narrative, yet simultaneously broad enough to spur much more work on this topic in the future. We therefore hope that, in an era of political polarisation and climate gridlock, it will help kickstart a new discussion.

Thus, this book is not only for all you free-marketeers, conservatives, and classical liberals out there who, like us, genuinely care about the natural world we live in, but also for all those looking for real and tangible environmental solutions: let this only be the beginning.

Vienna, June 2020 Christopher Barnard and Kai Weiss

About the Editors

British Conservation Alliance

The British Conservation Alliance is a UK non-profit organisation dedicated to empowering a new generation of leaders to promote market-based and free enterprise solutions to environmental problems. It was founded in September 2019, and currently operates a campus network of around 30 universities across the country.

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Christopher Barnard is the President and Founder of the British Conservation Alliance. Before founding BCA, he was the Head of Campaigns for Students For Liberty UK. His writings have been published in the Daily Telegraph, Washington Examiner, CapX, and more. When he's not doing environmental work, you can find him playing football, hiking the majestic English countryside, or entertaining his two border collies.

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Austrian Economics Center

The Austrian Economics Center is a politically independent research institute committed to disseminating the ideas of the Austrian School of Economics. The AEC considers public policies, identifies economic alternatives, and attempts to realize them based on rigorous analysis and academic research. The AEC's basic goal is the promotion of a free, responsible and prosperous society.

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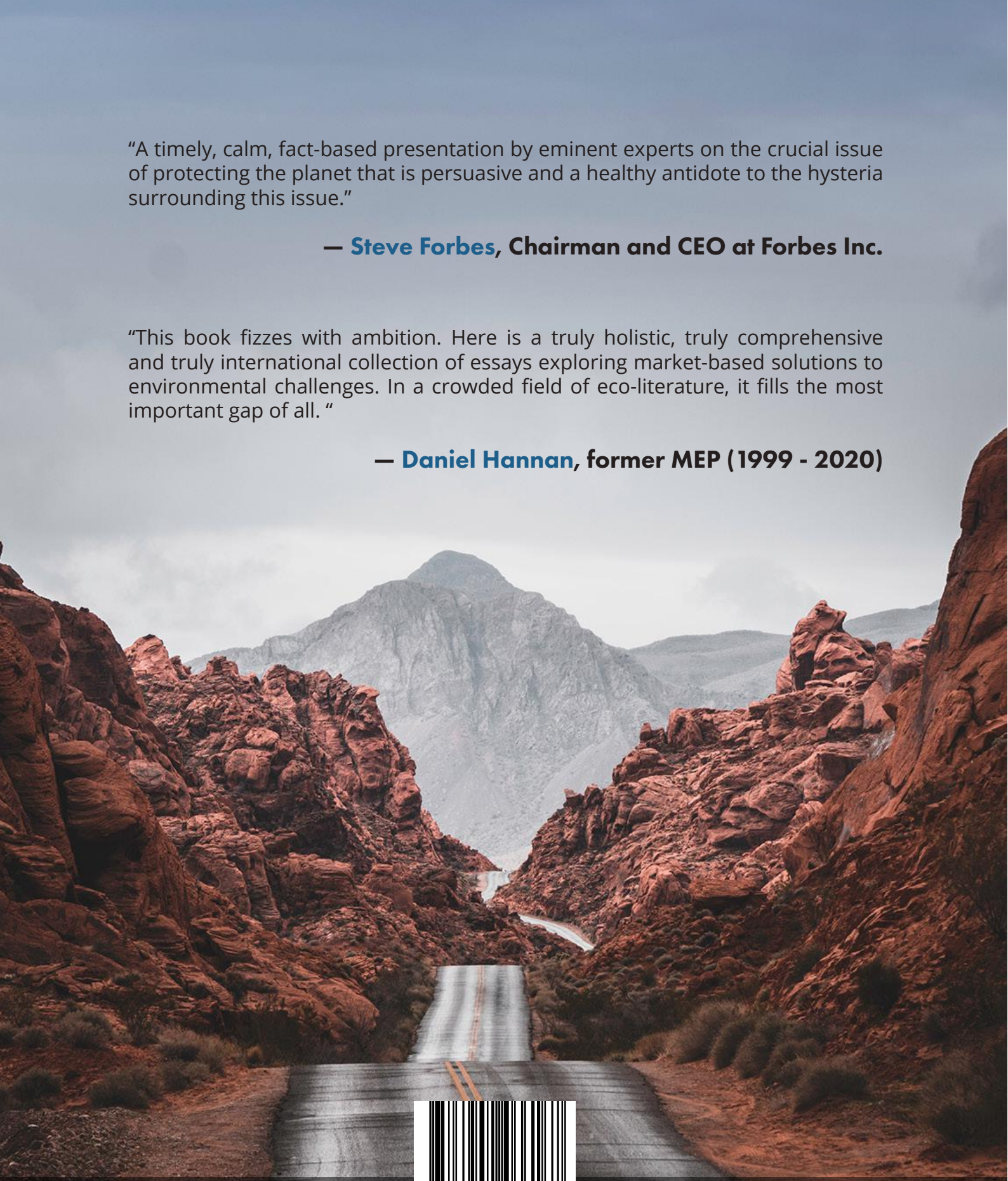
"A timely, calm, fact-based presentation by eminent experts on the crucial issue of protecting the planet that is persuasive and a healthy antidote to the hysteria surrounding this issue."

— Steve Forbes, Chairman and CEO at Forbes Inc.

"This book fizzes with ambition. Here is a truly holistic, truly comprehensive and truly international collection of essays exploring market-based solutions to environmental challenges. In a crowded field of eco-literature, it fills the most important gap of all. "

— Daniel Hannan, former MEP (1999 - 2020)



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